COAL AGE

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Is This My Boy?

IN THIS, the most savage of all wars, one that rocks the very world, and that is being fought to preserve human freedom on the face of the earth, it should not be necessary to use a sentimental picture to drive home vivid truths.

However, we Americans are so quick to forget and so prone to forgive that it is timely and wise to issue an appeal for personal cooperation and individual sacrifice, such as is contained in the colored poster—"Is This My Boy"—that is included as a supplement to this week's *Coal Age*.

Every intelligent and patriotic citizen of these United States remembers well how the President squirmed and maneuvered in his futile efforts to keep this country at peace. His desire to evade the issue of war was so pronounced that many red-blooded Americans wondered if this land of the free was still the abode of honor and national self-respect.

GERMANY killed our unarmed and neutral people; she attacked our defenseless citizens at sea and left them to perish; she went back beyond the Middle Ages in her brutality and insisted that it was necessary for her to violate treaties and abrogate international laws because she must win; she was unashamed in her declaration that the Fatherland's needs stood above the question of right.

We found that Germany planned world control, as was stated plainly by Zimmerman; that if we permitted the Allies to lose, we would later have to fight Germany alone; that if the war resulted in a draw, we would be obliged to support great fleets and vast armies in order that we might continue in our freedom.

We entered the war because Germany would crush the liberal form of government we believe in. We must go on fighting until on this earth no one ruler can force battle and death on all mankind. We fight, not only for ourselves, but to help those who believe as we do, and *there is not one thing in all the world worth a single thought today except winning the war.*

ONLY BY VICTORY can we win peace. Serious times are upon us. We must face changed conditions; we must think of our country first and ourselves last; we must undertake new duties and change old habits, and above all else we must not think that the little food, clothing, time and money we can each save are factors of too slight importance to consider in the final outcome. We must avoid that man or woman who today fails or refuses to make personal sacrifice as we would avoid a leper. It is these days of adversity that will prove to Uncle Sam who of his sons and daughters are worth knowing.

Every mine owner who seeks to gain dollars by this war is a traitor to the flag and all that emblem stands for. Every miner who now lends himself or his influence to a strike is an ally of the savages who are destroying churches, poisoning wells, maiming the inhabitants of a conquered country and thrusting young girls into worse than slavery.

Those of us who cannot get "over there" can at least back up the boys in the trenches and help them win. We can vote for men who place America first; we can expose slackers and so-called "conscientious objectors" who smugly profit by the patriotism and sacrifices of brave men; we can be loyal to our allies, hold up the hands of the President and Congress and not allow any talk of peace until peace means the end of all war

How would you feel and what would you do if the boy in the poster was your boy?

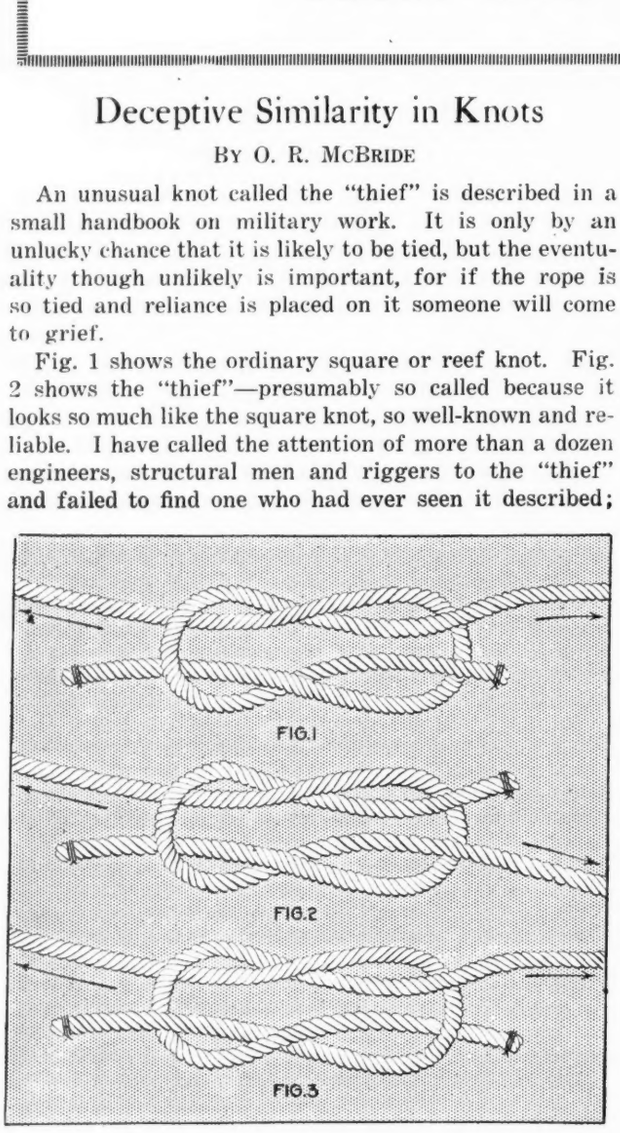
Ideas and Suggestions

Deceptive Similarity in Knots

BY O. R. MCBRIDE

An unusual knot called the "thief" is described in a small handbook on military work. It is only by an unlucky chance that it is likely to be tied, but the eventuality though unlikely is important, for if the rope is so tied and reliance is placed on it someone will come to grief.

Fig. 1 shows the ordinary square or reef knot. Fig. 2 shows the "thief"—presumably so called because it looks so much like the square knot, so well-known and reliable. I have called the attention of more than a dozen engineers, structural men and riggers to the "thief" and failed to find one who had ever seen it described;



ONE GOOD AND TWO BAD KNOTS
Fig. 1—The square knot. Fig. 2—The "thief." Fig. 3—The granny or rolling knot

most of them thought it would hold, but a trial soon showed that it would slip. The difference is entirely in the point of pull, which is on the same half of the knot in one case and on opposite sides in the other. The way in which the "thief" is most likely to be tied is when one bend or bight is made and the other end threaded through it. Fig. 3 is the "granny" or rolling knot and, like the "thief," will not hold. The difference between this and the square knot is that when the ends are brought back for the second half of the knot, they are crossed over. All that needs to be remembered in tying a square knot is to bend the ends back on the same side as they occur after the first half of the knot is made, so that the rope and the end lie on the same side of the loops. To avoid the "thief," see that the pull comes on the lines on the same side or half of the knot.—*Power.*

Sheet-Steel Slip for Hauling

An excellent conveyance for hauling loads, such as castings, pipe, drill steel, etc., may be made from a piece of discarded sheet steel, about 3 x 6 ft., bent up at one

SLIP FOR HAULING MADE FROM OLD STEEL PLATE

end to avoid obstructions, and fitted with a set of double trees for a team.

A great advantage over a wagon is the ease with which it can be loaded, as it is not necessary to lift the material up 3 or 4 ft., which is the case with a wagon, thereby effecting a saving both of time and labor.—*Engineering and Mining Journal.*

A Handy Penwiper

BY S. NEWMAN

Draftsmen and users of fine pens with heavy india ink are bothered by dirt and eraser residue getting on the pen. Penwipers are unhandy to use, as both hands are engaged at the moment, so the unsightly habit

THE PENWIPER

is formed of wiping the pen on clothing, board or the finger nails of the left hand.

To provide a really good penwiper, the writer has adopted the method illustrated. A piece of tissue paper is wrapped around the second finger of the left hand and held in place by the thumb or a rubber. It is a most handy device and preserves the cleanliness of the draftsman as well as of his pen.—*American Machinist.*

Economy and Safety in Mining

By a Mine Man

If we read the history of coal mining in Pennsylvania through all of its darkest pages; its heartache and misery for the workers; its losses and unsatisfactory returns for the owners—we shall be compelled to admit that selling price has been the real bogey and nightmare of mines and mining.

The mine owner in Europe, before beginning the development of a coal field, has proper plans made for all work to be done at the surface and underground. After that, a cost sheet is made showing cost of production for every class of labor, including a sufficient number of thoroughly competent men to manage and direct the efforts of every class of workmen. To the total net cost of production is added a profit that will enable the owner to conduct his business in a rational and humane way, and this figure is the fixed selling price and is maintained. In the past all hopes for better conditions in mining and the coal trade generally were dashed to pieces on the rocks of deadly competition. This brought about the survival of the unfittest. Only those who could put conscience in the background and produce cheap coal could hope to remain in business. And so began an endless chain of evils in methods of mining and mine management: Mines improperly ventilated, resulting in explosions, loss of life and property; unsuitable machinery used for various purposes; men working in awful conditions, in water or consuming coal dust, smoke or noxious gases; mine foremen trying to care for double the number of men they were able to care for and meet the requirements the state law. We might continue to recite all the dangerous practices and evils in the catalog of bad management of the past, but this will suffice.

Now that better times have come for the coal mining industry, with living wages and living prices paid for coal, let us strive to get away from the mistakes of the past with all its attendant evils in loss of life and destruction of property. Let us end the useless talk and twaddle about the if's and an's, and establish a system of mine management and mine inspection that will forever eliminate accidents of great magnitude in mines and reduce the ratio of minor unavoidable accidents to the lowest possible minimum.

The first move in this direction would be to imitate "Uncle Sam" in training, organizing and equipping his army of men for actual service in warfare. Let the commonwealth, or the mine owners, establish a training school for mine officials, where they would receive the kind of training and instruction that would enable them to do their work systematically and intelligently. Let the state law be changed so that the work of the mine foreman, fireboss and assistants would be placed under control of the commonwealth. Have coal fields mapped out under thick seam and thin seam and arrange the method of management for each district, the state to apportion the work of fireboss and other officials. Have a training camp or school for mine workers of all classes, more especially miners. All recruits for use in mines would be taught to speak the language of the nation and then thoroughly instructed by competent teachers in the science and art of coal mining, or in some department or line of work for which he seems best adapted. If the idea of "Safety First" is ever to mean what it is intended to convey to the average individual, it will be when we establish a system of mine management coupled with a system of mine inspection far in advance of past or present methods. Such a system aided by a Federal bureau, whose members will go into the mines and obtain data under actual working conditions, with all departments working together in conjunction, will eventually make it possible to do underground work as safely and sanely as work done above ground, in the factory, the mill or the shop. Only in this manner is safety and economy in mining to be attained.

See To It Yourself

By Safety Engineer

Just a word with you, Mr. Superintendent and Mr. Foreman.

In going through your mine, I have seen posted everywhere that part of President Wilson's speech at the opening of our part in the war, in which he speaks of the importance of the miner in the successful conduct of the war. In addition, you are being called on constantly to speed up and produce all the coal possible.

It is highly important that you and your men do your full duty in producing coal to satisfy the demands of the nation. In this drive for production, however, do not overlook the fact that the season of mine explosions is now at hand. If your mine has an explosion this winter, an important part of the output of coal is going to be lost to the country. Now, more than any other time, is it true that an accident is an irremediable economic loss. Under such circumstances is there any marked difference between the official who permits his mine to get into such a condition that an explosion results and the one who falls off in his output through indifference to the needs of the country?

See that your mine is in such shape that the season of explosions will not affect it. Remember that a dry and dusty mine is a dangerous mine. Do you know that yours is not dry and dusty? Don't take anyone's word for it. See to it yourself.

Art of Testing Mine Roof

The mine roof cannot be tested satisfactorily by merely drumming with the end of a stick or bar. Another stick or bar should be held against the rock thus tested so that the effect of the blow may be determined. Especially is this important where the roof is so high that it is hard to catch with the ear the hollow sound of the loosened roof mass. When the rock is thick a bar should be used: a pick will give a deceptive sense of security. Where the roof is high why not use a stool so that the roof can be reached with greater ease? A pile of coal makes a poor stage for such work.

Recent Advances in Byproduct Coking in the United Kingdom

By J. B. C. KERSHAW
9 Grosvenor Road, Colwyn Bay, North Wales

SYNOPSIS—*The present war has proved a great stimulant to byproduct coking in Great Britain. In some instances the byproducts have proved more valuable than the coke produced. It is probable that after the war English practice in coke making will more nearly approach American practice than is now the case.*

UNDER the stress of war and the huge demand for benzol for the manufacture of high explosives, the byproduct coking industry is advancing by leaps and bounds in all coal-mining countries. In the United Kingdom the displacement of the old beehive oven that wasted all the byproducts of coking had commenced long before the war. Progress was slow, however, and in 1907 the total weight of coke produced in ovens worked in connection with collieries, was 11,921,000 tons. Eighty per cent. of the ovens employed were of the beehive type.

In 1915, the last year for which figures are available, the coke produced by colliery companies in the United Kingdom totaled 11,908,940 tons[1], but the relative proportion of byproduct ovens to the total had increased from 18 per cent. to over 50 per cent. There is no doubt that when the figures are available for 1916 and the present year, the substitution of byproduct for beehive ovens will be found to have proceeded at a greatly accelerated rate, and that in another few years there will be few of the old wasteful beehive ovens still in operation east of the Atlantic.

Benzol and Toluol Chief Source of Profit

The benzol and toluol present in the tar and gases passing away from the ovens are now the chief interest and source of profit to the owners of byproduct coking plants. The accompanying diagram shows that whether regarded from the military or industrial standpoint, the old method of allowing all the volatile products of coking to escape was wasteful in the extreme, and that the war has served a useful purpose in bringing about a reform of our methods of coking coal.

As regards the types of byproduct ovens in operation in the United Kingdom, the following particulars are given for 1915 in the last Home Office report on mines and quarries:

Type	Number of Ovens	Type	Number of Ovens
Otto	2,034	Simplex	486
Simon Carves	1,766	Huessener	404
Coppee	1,340	Collin	171
Semet-Solvay	1,251	Other types	357
Koppers	1,241		
		Total	9,053

The various construction companies engaged in supplying coke-oven plants are exceptionally busy and report great activity in the erection of new plants and extension of old ones.

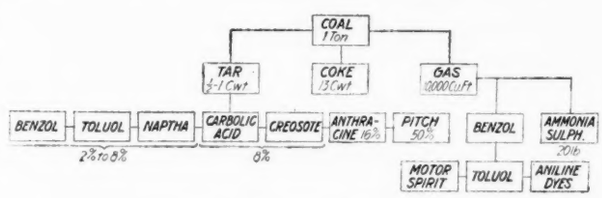
[1]This total does not include the coke produced in gas works or in iron and steel works having their own coking plants.

The most noteworthy feature of the modern oven is the increase over preceding types in size and the economy of heat, only one-half or even less of the gas produced, or 10 per cent. of the original heat content of the fuel, being required for carbonizing the coal. In the earlier types of byproduct ovens not only the whole of the gas, but also some of the coke, was required for this purpose. The improvement is chiefly due to the more perfect adoption of the regenerative system for preheating the air used for combustion, but it also arises in part from the improved design and materials used in constructing the ovens.

The flue arrangements by which the regenerative system is applied to coke-oven work has been much elaborated in the latest ovens, and the Otto-Hilgenstock oven has now four divisions of eight flues each, while the latest Coppée design has ten divisions each of three flues. Even this is exceeded in the Collin type of oven, for here we have 56 flues in the oven walls, with reversal of the gas and air current in every alternate flue.

The purpose of this elaborate construction is of course to obtain more uniform heating of the charge and greater heat economy. With over-elaboration, however, comes increased expense in construction and upkeep, and it will doubtless be found that the most economical design of coke oven lies between the two extremes of the earlier and later types. It is questionable also whether finality has been reached in the leading features of coke-oven design, for gas engineers in the United Kingdom believe that the vertical retort, continuously or semi-continuously operated, will be ultimately adopted in the byproduct coke industry.

This type of retort has proved a success in the coal-gas industry, and its adoption for byproduct coking would appear to be a natural development, and to obviate many disadvantages connected with the present



SOME BYPRODUCTS OF COKING

methods of constructing and working the ovens, notably those in connection with charging and discharging them. The other directions in which progress is occurring in this country are in relation to the study of refractory materials, the improvement of the apparatus and methods used for the recovery of benzol and toluol, and the more scientific control of the whole coking process.

With regard to the first of these subjects, the ceramic research laboratory of the pottery trade at Stoke, in Staffordshire, and the refractory materials research

laboratory at Sheffield University, are carrying out most useful experiments; and although America has been ahead of the United Kingdom in realizing the importance of refractories in coke-oven practice, the leaders of the industry in this country are now fully alive to the value of research work on this subject.

As regards the improvement of the apparatus and methods for the recovery of benzol and toluol, details of these will be found in the latter part of this article describing three of the latest erected plants. Incidentally, the question of the training required for the modern coke-oven manager is also referred to. Sheffield, Leeds and Newcastle universities have already created special departments for the training of men desirous of entering the coal-distillation industries, and it is proposed to combine a university and works course of training extending over four years. Limits of space will not permit further reference to the scheme of training proposed.

English and American Practice Contrasted

Although America was the first to introduce the large-sized byproduct coke oven, there are now several installations in the United Kingdom containing ovens taking 10 to 12 tons per charge, and the tendency is to replace the smaller units with larger ones, as and when extensions are necessary.

The new installation of 100 Koppers byproduct ovens at the coking plant of the Ebb-Vale Steel, Iron and Coal Co., in South Wales, are of 11 tons capacity, while the battery of 72 byproduct ovens of the Collins type recently erected for Bell Brothers, in County Durham, have a charging capacity of 12½ tons. The after effects of the war upon the labor situation in this country will tend to reproduce American conditions with regard to the relative costs of labor and materials, and will therefore render it necessary to reduce labor expense by increasing the capacity of the plant units.

Another striking difference between American and English practice is the use in the United States of 95 per cent. silica brick for a large part of the coke-oven construction, and in the shorter coking period which this renders possible. The higher temperature at which the coking occurs, due to the greater conductivity of the silica bricks, has of course some disadvantages, notably a reduction in the yield of ammonia and tar. The high price which these byproducts now command, as a result of the demand for fertilizers and explosives, tends to give the advantage at present to the lower temperature and longer period of distillation general in English practice. After the war, however, it is probable that the American system of high temperatures and more rapid distillation will be adopted. The relative yields of the two systems of heating is stated by Foxwell to be as follows:

	Period of Heating, Hr.	Yield of Gas, Cu.Ft.	Tar, Gal.	Ammonia Sulphate, Lb.
American practice	16½	12,200	4	18
English practice	26	10,000	5½	20

As already stated, only one-half of the gas produced is required for heating the modern ovens, and the surplus, amounting to between 5000 and 6000 cu.ft. per ton of coal charged into the ovens, is employed in the majority of instances for heating and power purposes in connection with the colliery or iron works to which the coking plant is attached.

In some cases, however, it is found more profitable to sell the gas, and at Middlesbrough, in North Yorkshire, the municipal coal-gas works has closed down and the whole gas supply of the town, amounting to 1,000,000 cu.ft. per day, is now drawn from the coke ovens at the Newport Works of Samuelson & Co., the gas being sold to the municipality at a charge of 16c. per 1000 cu.ft. Leeds is also drawing a portion of its municipal gas supply from the coke ovens of the Middleton Estate Colliery Company.

The illuminating value of the coke-oven gas is low, but since incandescent burners are now in general use, and a calorific standard has been adopted for town gas, this low illuminating value is of little account. In Durham the waste gas from the coke ovens attached to iron works and collieries is employed for steam-raising and generation of electric power, under the control of a separate company called the Waste Heat and Gas Electrical Generating Stations, Ltd. About 343,000 hp. is developed in this way and is distributed over an area of approximately 1400 square miles.

The battery of Collins ovens at the Port Clarence works of Bell Brothers has been designed and erected by the Coal Distillation Co., of Middlesbrough, and comprises 72 ovens with a charging capacity of 12½ tons each. The ovens have the following dimensions: Length, 34½ ft.; mean width, 1 ft. 7⅞ in.; height, 10 ft. 2 in. The flues are vertical, and the gas is passed alternately from top and bottom of the flues as already described; provision is also made whereby either their own gas or blast-furnace gas can be used for heating

Charging Car Is Feature of Installation

The most distinctive feature of the installation, however, is the electrically operated charging car, designed and erected by Coulson & Co., of Spennymore. This machine runs on rails laid on top of the ovens and takes from the fuel-supply bunkers a charge equal to the full capacity of each oven. There are four outlets in this car, corresponding to the number of oven charging holes. Each outlet is provided with a sliding door, or sluice, controlled by hand levers operated from the driver's platform. The car is driven by a 25-hp. inclosed Siemens-type motor.

Another noteworthy feature of this battery is the provision for the control of the doors. On the discharge side the doors are raised by an electrically operated winch, traveling on rails. From this winch is suspended the coke quencher. At the bottom of the sloping coke bench, onto which the hot coke is discharged, there are mesh plates and drop doors, through which the lump coke is directly loaded onto flat cars, while the breeze falls through the mesh plates into an inclined trough and is carried away to the settling tanks. On the opposite side of the battery are two machines made by the Littleshall Co., combining a ram and a leveler.

Provision is made also in this plant for the recovery of benzol from the gas, as well as tar and ammonia by the Coal Distillation Co.'s direct process.

The battery of regenerative coke ovens at the Earl Fitzwilliam coke works, in South Yorkshire, consists of 65 Otto ovens. The plant was erected by the Otto Coke Oven Co., of Leeds, with the Simon-Carves Co.,

of Manchester, as subcontractors, for a Baum-type washery. The washery has a capacity of 80 tons per hour, and its special features are the movement of the washwater by compressed air at a pressure of 2 lb. per square inch, the automatic recovery of the slurry, and the clarification of all the wash-water for reuse. The washer takes coal up to 3¼-in. mesh, and the settling tank is a large inverted cone, or funnel, carried on columns at a sufficiently high level to enable the clear water to run back to the washing boxes.

The ovens are of the usual Otto type, with inspection galleries beneath and an easily controlled system of heating by Bunsen burners at each vertical flue. A triple hopper machine receives the crushed and washed slack from the storage bunker and charges it into the ovens from the top, traveling along the face of the ovens as required. The ram used for discharging is of the Buchanan type and make, and the coke is pushed through a framework quencher onto a sloping bench, served by a line of railway.

The whole of the structural work around the ovens is of reinforced concrete. This material is also used for the settling pond and storage tanks for water. An electric power house, containing two 750-kw. generating sets, is driven by steam obtained from three Stirling water-tube boilers, heated by the waste heat from the ovens.

The plant comprises the necessary apparatus for benzol recovery and rectification, tar distillation, and ammonia recovery, all of the usual Otto type. The tar-distillation plant comprises two 20-ton stills. The benzol rectification plant is designed for the production of 90 per cent. benzol, toluol and solvent naphtha.

The Teams Byproduct Coke Co.'s plant at Teams, near Gateshead, differs from most of those recently erected in the United Kingdom, in that it is operated by an independent company and is not worked in alliance with any colliery or steel works. The coal used is bought in the open market, and the solid and liquid products of the plant are similarly disposed of, while the surplus gas from the ovens is piped through a 16-in. main 1½ miles to the Dunston power station of the Newcastle on Tyne Electric Supply Co. It is here employed for generating electricity.

The washing plant for slack has a capacity of 50 tons per hour, while drainage and storage hoppers are provided for 3000 tons of the washed fuel. In addition there is a coal-handling plant for coal which does not need washing, with storage hoppers of 450 tons capacity. The drainage and storage hoppers for the separate classes of coal are built in two rows, and underneath each row is a scraper conveyor of 50 tons capacity per hour. This brings the fuel to two Carr crushers of similar capacity, constructed above the ovens and from which the charging lorries that feed the two oven batteries are supplied. The coal-crushing plant is thus in duplicate, and when both sets are in operation it is capable of dealing with 100 tons per hour. The respective proportions of washed and unwashed coal used for charging the ovens can also be varied at will.

As a result of this arrangement, the average amount of moisture in the fuel charged into the ovens is reduced much below that customary when only washed coal is used, and a considerable saving in heat and time is thus realized. The coal is charged into the ovens by an electrically operated mechanical charging machine which can travel the full length of the batteries.

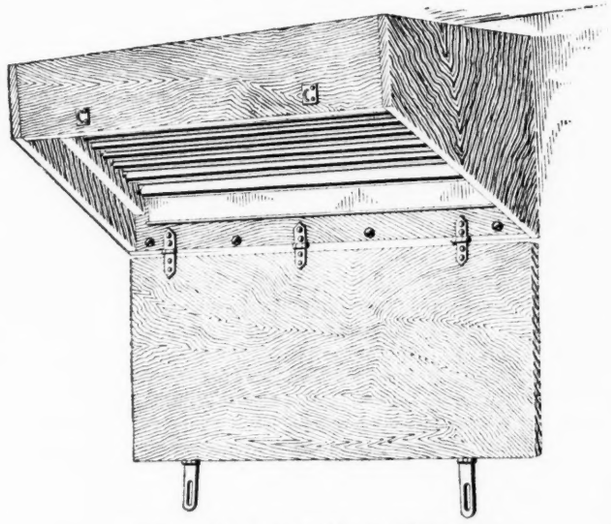
The two batteries contain 120 Otto regenerative ovens, each with a capacity of 8½ tons of washed coal. The whole battery is designed to coke 6000 tons per week. The ovens are 33 ft. 7 in. in length by 7 ft. 11 in. high, and have a mean width of 1 ft. 9 in. The gas is led to the heating flues by 15 connections for each oven wall. The coke is discharged by aid of an electrically operated ram onto a sloping bench, and is mechanically quenched.

Each 60-oven battery is provided with a coke conveyor. The screening plant is placed between the two batteries, and is provided with screens to suit the various sizes of coke required for the market. The ram track and coke benches are constructed of reinforced concrete, which is now generally employed for all construction work in connection with coking plants. All the machinery both at the ovens and throughout the plant is electrically operated.

The byproduct recovery plant includes tar separators, sulphate of ammonia apparatus, naphthalene spray coolers, benzol scrubbers and cast-iron oil stills for distillation of the crude benzol. The modern byproduct coke-oven plant, in fact, now embraces quite a large amount of chemical equipment, and there is no doubt that in future these works will have to be put in charge of men possessing high scientific qualifications in order to obtain the best possible results.

Exhibition Case for Large Maps

The accompanying sketch shows a serviceable exhibition case for large maps or drawings, the idea being adapted from similar map cases in use in libraries and schools. The maps are mounted on shade rollers of the proper length and hung in a wooden case. A door



EXHIBITION CASE FOR LARGE MAPS

with hinges and locks may be provided if protection from dust or the exclusion of the maps from public view is desired. The height of the case from the floor is determined by the length of the maps.—*Engineering and Mining Journal.*

Some Data on Acetylene Mine Lamps

FOLLOWING is a brief summary of some of the interesting facts regarding acetylene mine lamps, contained in a paper read by William Maurice, at a recent meeting of the Institution of Mining Engineers, in London, England.

Acetylene is produced by the decomposition of an alkaline, earthy carbide, by water. Calcium carbide (CaC_2), being cheap and yielding a good volume of gas, is usually employed for this purpose. The reaction is expressed thus

$$CaC_2 + 2H_2O = C_2H_2 + Ca(HO)_2$$

Calcium carbide is made by fusing a mixture of lime and carbon (coke or anthracite) in the proportion of 56 parts by weight of lime to 36 parts by weight of carbon in the electric furnace at a temperature of about 2400 deg. C. The calcium carbide flows as a liquid, then cools and solidifies in large blocks. The blocks, when cold are crushed and sized by passing through a screen. For miners' lamps the size of carbide is usually from ¾ in. to 1¾ in. in maximum dimensions. The smaller the carbide the smaller will be the gas yield per pound, the reason being that the smaller the lumps the larger is the area which is exposed to the air and the greater the absorption of moisture, which changes the carbide to lime.

A drum of commercial carbide weighing, say 110 lb. net, will contain 94½ lb. (86 per cent.) of pure carbide and 15½ lb. (14 per cent.) of impurities. If the gas yield for the whole drum works out on test at the rate of 4.8 cu.ft. per lb., the quality is satisfactory.

An acetylene cap lamp only makes about 0.144 cu.ft. of acetylene per hour. To burn this 1.722 cu.ft. of air is required, and the flame gives off 0.288 cu.ft. of carbon dioxide. According to Professor Lewes, acetylene nearly always contains minute traces of hydrogen, ammonia, sulphureted hydrogen, phosphureted hydrogen, nitrogen, oxygen and sometimes traces of carbon monoxide and dioxide. The chemical formula expressing the reaction when acetylene burns in air is

$$2C_2H_2 + 5O_2 + 20N_2 = 4CO_2 + 2H_2O + 20N_2$$

Experiments by the Federal Bureau of Mines show that taking 4.6 cu.ft. of acetylene as a good yield from 1 lb. of carbide, this volume would render 182 cu.ft. of air explosive, assuming the low explosive limit of the acetylene-air mixture to be 2.53 per cent. acetylene, that being the figure accepted where the acetylene is uniformly mixed throughout the space and confined to it. Unless carbide is stored in a mine, it is difficult to conceive how the air could become contaminated by a 2½ per cent. admixture of acetylene.

Construction of Different Types of Lamps

Nearly all types of acetylene mine lamps consist of two reservoirs placed one above the other, the first reservoir containing water, the second carbide; the water vessel has two orifices, the one for filling and the other for delivery to the carbide, the latter being regulated by a pointed end. The gas is delivered either directly from the carbide container through a burner bracket to a burner, or by a special tube passing through the water vessel to a burner fixed thereto.

The essential variations in lamp design are (1) in the means of closing the lamp to insure a gas-tight joint between the two principal parts, (2) in the means of regulating the flow of water on to the carbide and (3) in the design and position of the burner in the lamp.

All portable lamps having generators of class 1 can be grouped under one or other of the following seven systems, the gas-tightness of the joint being in every case obtained by the interposition of a rubber ring: (a) By direct screwing together of two reservoirs; (b) by central screw from below; (c) by central screw from above; (d) by bridle and pressure screw; (e) by multiple screws or side levers; (f) by bayonet joint; (g) by eccentric closing.

In all lamps in which the water falls on the carbide the water feed can be made (a) automatic, by means of a valve which is either open or closed; (b) semi-automatic, by means of an adjustable valve operating in conjunction with a controlled water-dropper; or (c) controlled, by the use of a cone-pointed screw which permits of the flow of water being regulated according to requirements.

Provision to Supply Air to the Burner

In order to effect the complete combustion of acetylene, burners are so designed as to take in at the jet the supply of air without which the gas would only burn with its normally smoky flame. In general all burners are formed either with minute air passages near the point of issue of the gas, or the gas orifices themselves are so disposed as to form an air envelope around the issuing gas.

As it is often useful to have an oper. flame that will not be put out by a strong wind, there has been devised what is known as a "hurricane" burner. This burner is surrounded by a mass of metal, the heat from which is sufficient to relight the lamp when extinguished by a strong wind or by shotfiring, etc. For gas consumption exceeding ½ ft., double jet burners in which two streams of gas impinge at an angle of 90 deg. are often used. After a lamp has been in use for some time, the burner may become charred at the tip, or the very minute gas orifices may become choked with dust that has been carried through in the gas. Small pocket devices known as "burner-cleaning brushes" are used to clean the burners externally, and burner wires, either mounted singly or in a cluster, are carried for the purpose of clearing out any obstruction in the gas passages.

The length of time which any lamp will burn is fixed by the weight of carbide it will contain and by the size of the burner used. A lamp holding a charge of 11 oz. and provided with a ⅜-cu.ft. burner will burn for $\frac{11 \times 0.3}{0.375}$ = say 9 hours. Usually a lamp will burn longer than its calculated time, because the pressure developed in it is less than that for which the burner is rated. The acetylene flame gives over twelve times the light of a flat coal-gas flame and about one-sixth times the light obtainable from an incandescent mantle when all burn at the rate of 1 cu.ft. of gas per hour.

Safety First or Accident Prevention

By ANTHRACITE WELFARE WORKER

THE safety movement in the anthracite district of Pennsylvania is by no means new to the men and boys employed in the hard-coal mines of that state, for during the past decade "safety first" has there been a slogan. However, the effort does not seem to have been appreciated by the rank and file of our mine employees, for among the industrial workers there are none who are so skeptical of the effort made by their employers along safety lines as the mine workers themselves.

Why this should be so I am at a loss to explain, but it is nevertheless true that the movement has been treated with suspicion by those it was intended to protect and assist. I have known of instances where persons have been called "suckers" and other less desirable names because they have been selected to act on safety committees or have become interested in safety-first meetings and safety matters.

It is discouraging to find that the ones who should be most interested in this cause are not only cool toward it, but frequently insinuate that the coal operators behind the movement are prompted only by their desire to save the almighty dollar. In my opinion this is a great injustice, as the executive heads of the coal-mining companies are just as human as the man behind the drill. When an accident happens in any of their mines by which one or more persons lose their lives or are seriously injured, they are sympathetic and are really sorry for the unfortunate and bereaved ones. I have heard some of them express themselves freely under such circumstances.

It is to be regretted that there is not a mutual understanding between the employer and employee on this most vital and important question—the conservation of life and the happiness of the human race. The Legislature of Pennsylvania passed a compensation law during its session of 1915, and during the session of 1917 ten or twelve bills were introduced which contained radical amendments to the present law, but all failed of passage. These bills, however, were a source of worry and dissatisfaction to the workers as well as the employers.

THE question uppermost in my mind is, Should the employers not take the necessary time before the next session of this law-making body to meet and discuss the compensation law from its various angles and draft or prepare whatever amendments may seem necessary and reasonable and see that someone is detailed to introduce them early in the session?

I think I can hear someone say, "This is politics and not Safety First." Call it politics, or what you will, in my opinion this would be the proper thing to do. The wage earner is satisfied that when he is injured 50 per cent. of his earnings is not sufficient to compensate him for his loss of time, drug-store bills and other necessary expenses due to the injury he has sustained, and he is therefore asking that it be increased to 66⅔ per cent. The employer on the other hand contends that this amount is more than he can afford to pay and that many workers would take advantage of this increased compensation and remain away from their work for a longer time than is really necessary.

"Safety First" is a real human movement and should be furthered by all concerned, employees as well as employers. Many capable men in and about the coal mines of this country do not hesitate at all times to state that accidents are inevitable, and that regardless of what will be done these accidents are still going to occur. Figures made public by the clearing house of the safety movement—the National Safety Council—seem to explode this theory and rather indicate that accident prevention is not a dream, but a reality. This is particularly true of all other industries, why not of the coal-mining industry?

HOW can this safety movement be best put into effect? The individual himself must be appealed to. How shall this appeal be made? The division, district or colliery superintendent cannot talk to each individual employee, but he can talk to his foremen, assistant foremen, firebosses, breaker bosses and other officials. These in their turn can arrange to meet their men some evening, say once a month or so, together with the members of the various safety committees, and talk to them regarding this very important matter and get their ideas as to the best methods to pursue to bring about the desired result. If these men can be induced to boost for "safety," this can be accomplished.

A foreman must never violate a safety rule himself or permit anyone else to do so with his knowledge and consent. He should also be careful when approaching those who fail to obey safety rules and endeavor to show those guilty that they have others dependent upon them, and that it does not pay to take a chance of going through life minus an arm, leg or eye, or perhaps leave a wife and three or four small children dependent upon the charity of others.

A foreman should also never overlook any needless exposure or smart trick performed by an employee in his presence, for that is the best time to talk to the individual himself regarding these matters and show him what might have been the result. I am not in favor of severe censure. Stand the guilty party up in the corner and talk to him regarding the rule he violated, or show him what he should have done for his own protection or for the safety of others. Such action would, in my opinion, prove to the men that the company and its officers are, at least, sincere in their effort for "Safety First."

I am not in favor of firing a man for his first offense, or even the second. Some of the most reckless men will sometimes turn out to be the best safety boosters after they have seen the error of their ways. It is true that you will get tired coaxing the knocker to protect his life or the lives of his fellow workmen. You will get tired of coddling the fellow who disregards your safety rules and laughs at your efforts to improve conditions at your mines. The service of such men must be dispensed with promptly after a fair warning, and I feel safe in saying that you will find this action necessary in few cases.

The foregoing is not a theory, but are statements based on years of experience. The one who undertakes

to introduce the safety-first movement into a mine will find that he has a real big man's job on his hands. The employees are not going to fall for this movement during the first week or even during the first month. It will take a lot of hammering to bring the principles home to the workers, particularly if the bosses themselves are half-hearted in the movement.

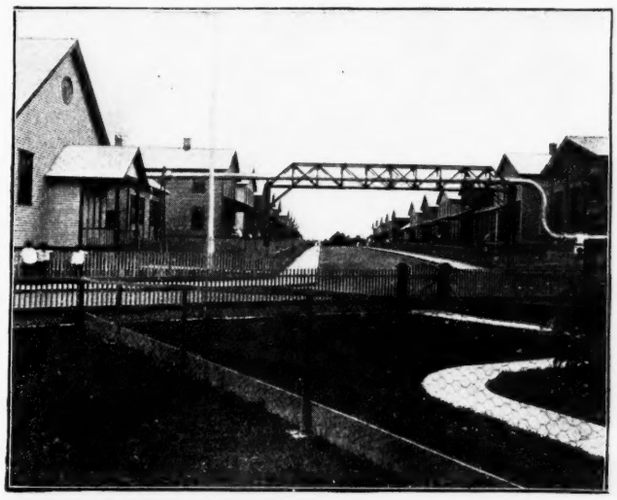
Most of the executive heads of the larger coal companies, for humane as well as economic reasons, are in sympathy with this safety-first propaganda. To advance the movement, I am in favor of the visual mine safety instructions, or the use of moving pictures, such as those employed by the Ellsworth Collieries Co., the H. C. Frick Co., the Delaware, Lackawanna & Western R.R. Coal Department and others. These pictures are based on some accident that has occurred, and have been staged for the purpose of showing how it could have been avoided.

New Ideas in Anthracite Villages

The village of Underwood, belonging to the Pennsylvania Coal Co., an anthracite corporation, has proved after two years' experience a complete success. It is situated about a half mile from the town of Olyphant, on the edge of a fine grove, which furnishes an ideal spot for recreation and rest. A dance platform and a generous supply of durable swings, protected by shade trees, have been provided for amusement. A handball court and a baseball diamond have been laid out for the use of the boys and young men.

On the street leading from the grove are the homes of the colliery officials, six in number. These are of frame and are of the familiar square design of suburban homes. Running from this at right angles is another street on which are located the residences occupied by the workmen. These are 20 double frame houses, neatly painted and with porches front and back. Each contains six electric-lighted rooms of comfortable size. There are individual gardens for each tenant, and the well-kept lawns are separated by line fences. The streets are lighted and are of macadam with curbing and walks of concrete.

There are two neighborhood bathhouses, which are cared for by janitors employed by the company. These contain enough tubs so that one can be apportioned to the exclusive use of three or four families. Garbage and other refuse is removed without expense to the residents of the village. The colliery officials have provided barrels at the rear of each tenant's lot. These barrels are emptied frequently and the refuse carted away. At the intersection of the streets stands the community building, serving as school, church and meeting hall. The Olyphant school board provides a teacher, and the company supplies a clergyman for Sunday evening services. Near-by is a structure in which is kept an ambulance and the fire-fighting apparatus of the village. The whole presents a picture of contentment. Needless to say there are no vacant houses in this settlement, and the Pennsylvania company finds that the housing facilities help it to keep the men.



MAIN STREET, UNDERWOOD VILLAGE, PENNSYLVANIA COAL CO.

HOMES OF THE FOREMEN, UNDERWOOD VILLAGE, PENNSYLVANIA COAL CO.

Rules and Regulations To Be Followed for the Prevention of Fires

Constant vigilance and cleanliness are the best preventives of fire. All officers and employees must give personal attention to the protection of the company's property from fire, and the officer or employee who fails to do so does not perform his full duty, even though the property concerned may not be in charge of the department with which he is connected.

THE rules and regulations given below for the prevention of fires are practical, and will be found to work out well if they are strictly observed in and about the mine.

1. The general superintendents will appoint at each mine a responsible employee to act as fire chief. The fire chief will be in direct charge of the fire brigade and will be held responsible for the efficient condition of all fire-fighting apparatus on the premises.

2. Smoking is prohibited in shops, storehouses, warehouses and at all points where inflammable materials are handled. Lighted cigarettes, pipes and cigars must not be brought inside of the buildings.

3. All defects which tend to increase the risk of fire must be corrected or reported at once to the general superintendent.

4. Greasy and oily waste must be kept in covered metal cans. Waste cans must be emptied at the close of each day's work, as the combination of oil and waste or rags under certain conditions will cause fire by spontaneous combustion.

5. Sawdust must not be used in spittoons. Wooden spittoons are prohibited.

6. The use of matches in and around buildings should be avoided as much as possible; but when they are necessary, safety matches should be provided and care taken to see that they are extinguished after being used. When kept in stock, metal boxes should be provided for them.

7. Dirt, rubbish and inflammable material must not be allowed to accumulate in or about the shops, warehouses, buildings or premises of the company. Attic space must not be used for storage purposes.

8. The use of benzene, gasoline or naphtha for mechanical purposes in any building will not be permitted, except in cases where the written approval of the general manager and superintendent of the insurance department, both as to quantity and purpose, has been obtained. Where gasoline power is used, special care should be given to oil pumps, to see that oil is not leaking.

9. Supplies of benzene, gasoline or naphtha must be kept only in structures especially provided for the storage of these fluids.

10. The use of gasoline stoves for cooking or heating purposes, or of gasoline for lighting in warehouses and other buildings, is prohibited unless by consent of the superintendent of the insurance department.

11. Where there are locked fire-alarm boxes near or in tipple buildings, shops, warehouses and other buildings, the key must be procured and hung up in a conspicuous and accessible place. Fire-alarm boxes or wires should not be attached to buildings.

12. Well ventilated closets for workmen's clothing and tools, preferably of metal, should be provided in tipple buildings and shops. No closed closets should be allowed.

13. Fire barrels must be kept filled and salt or calcium chloride added to the water in them where it is likely to freeze. Hose, plugs and other fire appliances must be tested and kept in good condition, fire brigades organized and drilled every ten days and employees instructed as to the use and method of handling fire extinguishers. A good supply of barrels and fire pails should be provided in all shops, warehouses and tipples.

Rules To Be Observed Where Oil Is Stored or Used for Heating or Illuminating Purposes

14. Kerosene oil lamps with glass fonts are objectionable. Lamps with metal fonts must be used. They must not be filled after dark or near fire, as the oil when low generates an explosive gas. Paper shades must not be used.

15. Oil for company use in shops and warehouses, except where a small quantity is kept on hand, should be kept outside of main buildings. Wherever it is practicable to do so, arrangements should be made to keep it in the coal house or other small outbuilding; in all cases a metal-lined box with a good base shall be provided as a place on which to clean and fill lamps and keep oil cans.

16. Portable furnaces using petroleum oils should be removed from building when not in actual operation. See that all oil is turned off at main supply tank at night on all oil systems.

17. Pails of fine dry sand should be maintained at all places where oil and grease are stored.

Rules To Be Observed Where Stoves or Furnaces Are Used for Heating Purposes

18. Furnaces and stoves for heating buildings must be securely set on stone, concrete, cemented brick or metal. Woodwork near furnaces and stove or stove pipes must be protected by sheet metal and air spaces provided where stove pipes pass through woodwork. Stove pipes must not pass through concealed places, such as an attic, or enter flues in concealed places. The stove pipe inside of building must be in plain view. Where stove pipes pass through record and file rooms, care should be taken to see that papers are kept a sufficient distance from same and a metal guard or screen provided to prevent contact.

19. Ashes must be handled in metal utensils and removed each day. Ashes must not be kept in wooden boxes nor thrown against sides of buildings or platforms.

20. Furnaces, stoves, pipes, flues and chimneys must be thoroughly examined by the officer in charge as often as necessary for defects which might bring in risk of fire. These defects must be speedily remedied.

21. Steam pipes must rest on metal supports and not be placed too close to woodwork; they should be kept free from greasy or oily waste and other inflammable material. Clothing must not be hung on or near steam pipes.

22. Rigid gas and lamp fixtures are preferable and must be used wherever possible. Where swinging brackets are necessary, they must be so protected that the heat or flame cannot reach woodwork or other inflammable material.

23. Electric light, telegraph and telephone wires in buildings must be properly insulated and equipped with safety devices. They should be overhauled and inspected regularly and kept up to standard, especially in buildings where the wiring is not of recent installation. All telegraph or telephone wires before entering buildings of the company should be protected by lightning arresters, and in cases where they are liable to come in contact with high potential wires, by excessive current protectors. No person should be allowed to make alterations or repairs of any kind to electrical equipment or apparatus except with authorization from the general superintendent.

24. Never place paper shades on electric lights. Place wire guards on all lamps used in record rooms and see that lamp cords are short enough so that lights cannot be placed inside pigeon holes or on shelves.

25. Regular monthly report must be rendered to the general office showing progress made in carrying out the recommendations of the superintendent of the insurance department for improved fire protection, showing by item and survey numbers status of each recommendation.

Novel Self-Acting Plane

By J. A. Smith
Albert, W. Va.

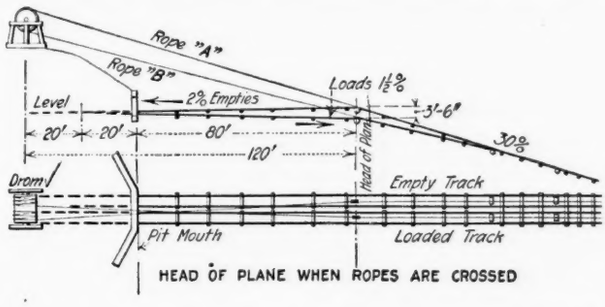
The accompanying illustration shows a self-acting gravity plane, which is something of a departure from the usual type. In this plane, which is double-tracked from head to foot, the loads always use the same track, while the empties always run over the other track. At the head, the empty track is higher than the loaded track, while at the bottom the reverse is true.

The following are some of the advantages of this type of plane: When a loaded trip is brought to the pit mouth, the locomotive can switch over, couple to the empty trip, and go back into the mine without the delay of waiting till the trip is run down and returned to the head of the plane. With other types of planes, the locomotive either waits and pulls the empties ahead as they are landed, or a horse or some mechanical arrangement is used to do this work. But with the empty track higher than the loaded track, the empty cars will run away from, and the loaded cars will run toward, the knuckle.

No switch points, latches, frogs or wyes are required. This does away with derailments and collisions on the plane, which are nearly always caused by a switch point or latch either being set wrong or else slipping out of place. The only disadvantage is the extra cost, arising from the wall or cribbing required at the plane head, and to the additional rail needed.

The operation of the plane is as follows: The rope *B* being on the empty side, the rope *A* is coupled to the loads, which are then dropped down the loaded track, as in the usual style of plane. At the foot, the coupler cuts it off from loads and fastens it (the rope *A*) to the empties. At the head, the rope *B* is uncoupled from empties, the end carried *under* the rope *A*, and then fastened to the loads. As the loads run down toward the blocks at the knuckle, they pass under and automatically lift the rope *A* to the top of the loads, from which it can be carried with ease and placed in the sheave in the center of the empty track. The trip is started down the plane, and as soon as stress comes on the rope *A* it straightens and takes the center of the empty track. (This trip is the one run with ropes crossed at the head, as shown in the illustration.)

As one rope runs diagonally from the low side of the drum to the low side of the plane head (loaded track), and the other rope from the high side of the drum to the high side of the plane head (empty track), one rope



HEAD OF PLANE WHEN ROPES ARE CROSSED

does not come in contact with the other, even though they are crossed. (See illustration of side elevation.)

After this trip is landed, the rope *A* is uncoupled from the empty trip, the end carried *over* the other rope (*B*), and coupled to the loads. As the loads run forward they lift the rope *B*, which is carried by hand from the center of the loads (the top of the loads is about level with empty track) to the sheave in the center of the empty track. The trip is then run, but this time the ropes are not crossed.

A plane of this kind must have a uniform grade or lie concave to operate successfully. If it lies convex side up, the rope will not straighten to the center of the empty track. On line with the empty track, the rope must come from the bottom side of the drum; with the loaded track, from the top side. The drum (a wheel can be arranged to operate as satisfactorily) should be set back far enough to overcome the tendency of the rope to pull cars sideways, off the track. It also should be located high enough, so that the ropes passing over the sheave will make only a small angle. If the rope is supported at several points between the knuckle of the plane and the drum, this will eliminate trouble due to sagging of the ropes, and assist in passing the rope from center to center of the tracks.

A discovery of comparatively recent origin has proved to be remarkably efficacious as a means of increasing the traction of leather belting working under excessive load. It is applied with an ordinary brush direct to the driving face of the troublesome pulley, courses of this gum-like cement alternating with courses of special, thin-woven cotton fabric, building up the pulley face and imparting to it an absolutely nonslipping surface.

Parallelism of Eastern and Western Interior Coal Fields

By CHARLES KEYES
Des Moines, Iowa

SYNOPSIS—*It is customary to regard the coal deposits of the Mississippi Valley as belonging to three distinct basins. That they are not so formed, but are merely parts of what was originally a single stratigraphic province, is amply demonstrated by recent investigations.*

THE three now separate parts distinguishing the coal deposits of the Mississippi Valley are not continuous merely because of the fact that regional planation has removed the connecting sections over the two large folds that traverse the country—the Ozark dome and the Mississippi River anticline. Instead, then, of three isolated embayments opening out in different directions, and having no genetic relationship with one another, fancy pictures, at the time of the coal accumulation, a single basin stretching out to the southward.

Investigations Disclose Incongruous Features

The wide lithologic homogeneity and terranal continuity of many of the beds constituting the coal measures enable single units to be traced over long distances. That the Illinois and Missouri-Iowa sections have never been matched up, as it were, or that the Arkansas and Kansas-Missouri measures have not been closely paralleled, is doubtless due largely to the circumstance that public systematic investigations seldom transgress state boundaries. The workers in one part of a province are wholly without intimate knowledge of what has been done elsewhere. The great force of this shortcoming led, not so very long ago, to a critical personal inspection of the conditions existing in states contiguous to those in which principal investigations had been previously carried on. Among the facts discovered were that the southern coal measures were mainly beneath the base of the Missouri and Iowa measures, and that there was actually great similarity between the general sections of the Eastern Interior and Western Interior coal fields. A host of once incongruous features was thus readily adjusted.

The detailed comparison of the Eastern Interior and Western Interior sections is rendered easy for the reason that it was found that instead of being separated by a wide belt of older rocks the two are actually continuous. This is made evident by the profound Cap-au-Grès displacement, which crosses the Mississippi River near the mouth of the Missouri River. This fault, having a throw of 1000 ft., drops the coal measures down so that there is now an unbroken belt of them extending from Indiana to Kansas. In this trough, also, the basal limestones of the Missourian, or Upper Coal, series are brought nearly 100 miles closer together than had previously been suspected.

The problem of comparing the Eastern Interior and Western Interior sections thus consists merely of matching up, after some little special investigation at critical points, the sequence of beds on the two limbs of a broad arch the crest of which is removed through erosion. In the west, in Missouri and Kansas, the details of the rock succession are more clearly discerned on account of the country being free from glacial débris. The wealth of detail there deciphered is at once the joy of geologists who work in the region and the despair of outsiders who are not acquainted with such refinements of stratigraphical conditions. It is the most completely differentiated section of the coal measures in the United States.

On the other hand, the coal measures of Illinois are the longest known and least understood stratigraphically of any coal deposits on the American continent. Notwithstanding the circumstance that one of the very first discoveries of mineral coal in America was made near the present city of Peoria in 1680, the Illinois section remains today almost as completely undifferentiated according to modern standards as it was three centuries ago.

With the exception of an early attempt—when the Permian controversy was at its height in this country—to show by the contained fossils that certain beds near LaSalle were to be compared with the Kansas Permian section (that is, Permo-Carboniferous, or Missourian), all efforts appear to be toward establishing correlative relationships with eastern sections. This tendency seems all the more pronounced since a concerted movement was inaugurated to take the Pennsylvania section out of the provincial class and make it the standard succession for the entire continent. In so doing important affinities are wholly lost sight of. Paleogeographical relations are forgotten. Paleontologic evidences are not analyzed. Lithologic similarities are overlooked. Similarity or lithologic sequence is passed over as of inconsequential in character. Fundamental canons of correlation are completely ignored.

Basal Member of Upper Coal Measures

Another important feature directly bearing upon the consanguinity of the Illinois, or Eastern Interior, with the Western Interior field is the recent determination of the eastward extension of the Bethany limestone, or basal member of the Upper Coal measures, far beyond its previously recorded limits. This discovery in the trough of the great Cap-au-Grès fault, in north-central Missouri, places the boundary of that member more than 50 miles in advance of any hitherto recognized eastern outcrop, and within only 50 miles of the Illinois line.

There are several advantages in selecting for the Illinois area the coal measures section constructed by A. H. Worthen. This section is made up in the same way as was the eastern Kansas section. It was erected under the guidance of F. B. Meek, who was at the time a collaborator of Worthen and than whom no worker was more familiar with the Kansas sequence. Worthen's section has a further advantage over later ones in that it goes into sufficient detail and was made by one who had gone over the whole field.

Adjudicating the paleogeographical affinities of the Illinois coal measures according to the standard Missouri section, there appears to be a wonderfully close correspondence in general features in the two successions. This parallelism is indicated in the table:

	Missouri		Illinois	
Missourian Series	Atchison shales	500	Shales	235
	Forbes limestone	30	Effingham limestones	8
	Platte shales	200	Shales	200
	Plattsmouth limestone	50	Martinville limestones	25
	Lawrence shales	300	Shales	100
	Stanton limestones	20	Livingston limestones	20
	Parkville shales	100	Shales	75
	Iola limestones	30	Absent	...
	Thayer shales	100	Shales	75
	Bethany limestones	50	Shoal limestones	7
Des Moines Series	Marais des C. shales	300	Shales	35
	Henrietta limestones	100	Mazon limestones	100
	Cherokee shales	250	Shales	200
Arkansan Series	Absent	...	Absent	...

A point of especial industrial importance is the fact that more than 95 per cent. of the available coal tonnage is confined in the Eastern Interior field to horizons in the Des Moines series. This is another genetic factor linking it closely with the Western Interior field, where 98 per cent. of the coal is also found to be restricted to the Des Moines series.

Does Coal Sale Imply Quality Warranty?

By A. L. H. Street
Attorney at Law, Minneapolis, Minnesota

Coal sales are subject to the general principle of law that where goods of specified kind and quality are contracted to be sold, the seller impliedly warrants that goods delivered will conform to this specification. If an inferior grade of fuel be shipped, the buyer is within his legal rights in refusing to accept delivery (Worth Huskey Coal Co. vs. Parker-Washington Co., 157 Ill. App. 199).

This proposition, so consonant with common sense, as well as elementary law, is generally understood, and controversies usually arise only for want of full specification of quality. The nature of some of the more important of these controversies and the controlling legal principles are disclosed by several interesting court decisions found in the law reports.

An early Pennsylvania decision shows that a buyer's rights depend somewhat upon his opportunities for inspection, in the absence of specific description of quality in the contract. The court said:

"When a coal dealer gives an order to the agent of a mine for coal to be sent to him from the mine, it is an implied term of the contract that the coal shall be of a merchantable character. It would not be allowed in such a case that the seller should, in compliance with such an order send an article, which, though it might still pass muster by the name of coal, was composed of one-half slate or stone. It would be different if a man went into the coal yard and purchased a quantity of coal there lying. His eyes, in such a case, are his market, and if he distrusts his own judgment, he should take the opinion of those who are acquainted with the article, or require the seller to warrant. But a man's eyes are of no use to him when he is buying something in the bowels of the earth 50 or 100 miles distant." (Edwards vs. Hathaway, 1 Phila. 547.)

Except as the particular contract may be made with reference to the buyer's use of coal for a specific purpose, there is no implied undertaking on the part of the seller that the fuel will answer particular purposes of the purchaser. This point is illustrated by the decision of the West Virginia Supreme Court of Appeals in the case of Buffalo Collieries Co. vs. Indian Run Coal Co., 73 W. Va. 665, wherein it was held that a contract to furnish "nut and slack," made and partly fulfilled at a time when the seller was shipping dry coal, was substantially complied with by later furnishing washed "nut and slack" from the same mine, containing more heat units per ton than unwashed coal, although mixed in a different manner.

One of the buyer's customers was satisfied with the coal shipped until the washed shipments were made, when freezing of the coal in transit was found to make it difficult to handle the fuel in automatic stokers. The court decided that the seller had substantially complied with the contract, and that the buyer was not entitled to complain of delivery of washed coal nor of the manner of mixing the nut and slack in cars, because the buyer knew, without objecting, that the seller intended to install a washer at its mine, and that the change would necessarily involve a change in the manner of mixing. The court said:

"The defendant's customer was the dissatisfied party, not defendant, and its complaint was not because of the quality of the coal. The gravamen of its complaint was that the washed coal would not work well in the automatic feeder which carried the coal to the furnaces. There is no evidence that plaintiff sold the coal with reference to its being used in any particular device for the handling of it, which required dry coal, and, therefore, there was no implied warranty that it would answer such purpose."

Other Pertinent Decisions

In the case of Peoria Grape Sugar Co. vs. Turney, 175 Ill. 631, it was held that a contract calling for delivery of a certain kind of coal designated by its trade name carried no implied warranty of its fitness for any purpose, or of its quality, other than it be of the kind specified. This decision was followed by the Illinois Appellate Court in the case of South Side Coal Co. vs. Gross, 157 Ill. App. 218, where it was decided that under a contract to deliver "genuine Pocahontas coal," there was no implied warranty by the seller beyond the obligation to deliver coal of the kind named.

That the negotiations of the parties may be considered to fix the seller's obligation is indicated by the holding of the Indiana Appellate Court in the case of Indiana Fuel Supply Co. vs. Indianapolis Bakset Co., 41 Ind. App. 658. There it was decided that where the buyer, on being solicited for an order, told the seller's agent that he had been buying "Indiana egg, double-screened, absolutely clean, for $1.75," and the agent replied, "We will put it in here for $1.75," a resulting contract for "Indiana egg" required the seller to deliver the coal double-screened and clean.

Byproduct coke is now being made from Illinois coal by the Semet-Solvay process without admixture with coal from other fields. This coal is coked for the United States Steel Corporation. The Illinois product is a true bituminous coal and has been regarded in the past as somewhat too fat in volatile matter for satisfactory by-product coking except when mixed with leaner coals.

Women in Industry

By ALEX MOSS

SYNOPSIS — *Confronted by a dearth of skilled labor, Great Britain trained her women and turned them into the factories to take the place of enlisted men. Should the war last for some time, as it shows every prospect of doing, the United States will have to resort to the same plan. There are any number of places in and about the mines of this country where women could be employed to advantage.*

BACK somewhere before the dawn of the Christian Era, the Amazons, according to mythology, were a tribe of female warriors that conquered Scythia, or what is now generally known as northern and central Asia. Even in modern times the existence of "Amazons" (in the sense of fighting women) is an undoubted fact, for in the year 1818 regiments of trained women fought side by side with the men in the army of Dahomey, a country of West Africa; but they are said to have died out during the French protectorate.

It is a long step across the calendar of time from 100 B. C. to the year of our Lord 1917, but more than a mere analogy may be drawn from the militant women of that earlier period to the fighting women soldiers of the Russian revolutionary army.

Far greater, however, and more effective in point of accomplishment than the war-like endeavors of the soldier-women of Russia, is the vast industrial army of women that has stepped into the places left vacant through the withdrawal of men from the industries of Great Britain.

We in America are familiar with the industrial mistakes made by England during the early days of the war. We know how skilled artisans in every field of endeavor were withdrawn from manufacturing pursuits and sent across the channel to stop the rapid advance of the invading Germans in France. We also know that many of these expert mechanics were killed, others captured and still others incapacitated.

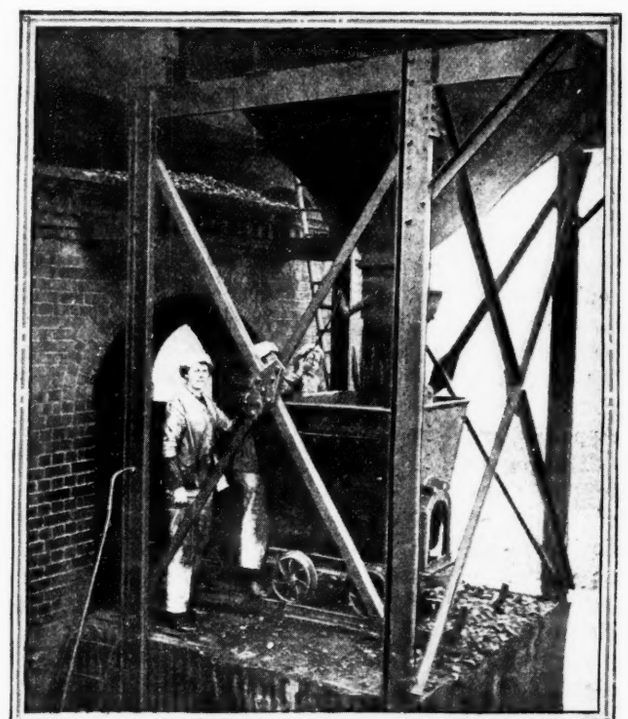
We know that it was not until thinking individuals at home realized the gravity and seriousness of a continuance of this policy of making "gun fodder" of men whose skill could not readily be replaced that a halt was called on this indiscriminatory sacrifice.

But what we in America do not know—or at least we did not know up to a comparatively short time ago—is of the wonderful way in which the women folk of Great Britain discarded fluffy skirts and their necessary concomitants, donned the overalls which the men had thrown off for the regimentals, and pitched into every line of industry to help England win the greatest fight she has ever had on her hands.

One million women are now employed in the munitions industries of Great Britain. Not as stenographers, bookkeepers, in textile mills and the like—positions that are truly light and in which women have previously labored—but in munitions works, airplane factories and explosives plants, work that was known as heavy work that only a man could do. Think of it! One million women engaged in tasks that were formerly considered man's work.

Those in a position to know are emphatic in their assertion that the aptitude shown by the majority of the women in the airplane factories and gun works of England today not only compares favorably with the standards set in pre-war days, but also that in many occupations the women have proved far more competent and satisfactory than the men.

Great Britain has more than one thousand factories employed in one way or another on the production of airplanes alone, and the output at the end of the current year will exceed by six times what it was in July



LONDON GIRL "COALIES"

Women coal haulers at the London Hydraulic Power Co.'s pumping station help to keep things going during war times

of 1916. The increase was largely brought about by the introduction of women into the plants, the percentage of female labor in this industry alone having risen from 19 to 37 in the first five months of 1917.

In one munitions plant in England which employs 15,000 hands, 11,000 are women. The women perform all the operations necessary to the production of 5- and 6-in. shells, not only the repetition work, but all the necessary tool-setting operations and intricate work.

Not only the women of England, however, have responded to the call. In every warring country today the women have shown the sterner stuff that lay dormant and are now working wonders to back up their loved ones on the firing line.

Here in America we will soon be face to face with the same necessity. As our man-power is slowly drawn from the lathe, from the forge, from the desk—from industry everywhere and of every kind—we will have to resort to the same means that has been the salvation of industrial England—woman-power.

Even now in this country there exists a shortage of labor, and we have not yet started to do our bit in real earnest. Our part up to now has not been exactly passive, but we have not been called on to make sacrifices of any great extent.

But it is inevitable that ere long we will be active combatants. Casualty lists will reach this side of the Atlantic vastly greater than the reports of our losses which now reach us, and more and more men will be called to fill the gaps.

How else will America be able to hold up its end at home if not by the introduction of women into industry on a large scale? Many plants here are already employing women to run their machines, and it is only a question of time when their number will be increased by hundreds and thousands. Millions of men will be withdrawn from industry by the draft, and in order to maintain production their ranks must be met from the most available source. We must utilize women on as much of the work as possible, after training them to do it.

That there will be opposition to the wholesale entry of women into industry is probable. Man is jealous of his prerogatives, and he has repeatedly asserted that woman's sphere is in the home. Wherever he has permitted her to labor it has been in the less arduous occupations. But that stubborn and unreasoning opposition will perforce have to give way to calm and unbiased acquiescence is certain.

When the British Ministry of Munitions first started the plan of training women to take the places of men, the English workingman resented it bitterly. The act was considered one of the horrors of war, something allied to invading Zeppelins and the shortage of sugar. But the wisdom of the plan has been demonstrated beyond the shadow of a doubt, and it is a foregone conclusion that when the call comes in this country our women folk will not be a bit backward in responding.

It is fortunate, indeed, that in our large female population we have an hitherto unexpected reservoir from which we may draw to fill the breaches in our industrial ranks. And it is not at all beyond the bounds of probability that in the months to come thousands of women will be employed in various arduous capacities in and about the coal mines of this country.

There is no valid reason why women could not be employed in the mines as pickers, checkweighers, dumpers, oilers, loaders and trimmers, sweepers and laborers around the shops, warehouse keepers, oilhouse keepers, explosives distributors, signalers, locomotive runners and trappers—to mention only a few of the positions that could be filled by women.

The railroads of the country are already employing women in increasing numbers. Approximately 5000, or 30 per cent. of the employees of the Pennsylvania lines east of Pittsburgh are women, compared with only 1956 on June 1, 1917, and they are holding all kinds of jobs from train dispatcher to section hand. Why should not the mines meet its need for labor in the same manner?

Air Required To Operate Air-Lift

By A. W. Allen

Metallurgical Engineer, 309 Broadway, New York

The free-air requirements given in this table are only roughly approximate, and in view of the wide elasticity of operation of this class of pump any greater precision has been considered unnecessary. The figures given are based on theoretical calculations, plus a wide margin to allow for work in ordinary installations. If care is taken in the design of the lift, the amount of air actually required will be found to be below the estimated volume; but it was thought advisable to allow an ample margin as excess of air is used in so many installations as a remedy for defective design. On the other hand, it is almost impossible to estimate with accuracy in a case in which there is much constriction at the intake, bends or elbows in the rising main, or in which the air inlet is nozzled in a mistaken idea that the water is forced up with the pressure of the air.

The figures given cover submergences of 60 per cent. and 66 per cent., the point of maximum efficiency for

VOLUME OF AIR REQUIRED TO OPERATE AIR LIFT

Lift Ft.	Feet Submerged	Size of Lift Pipe — 2 in.	2½ in.	3 in.	3½ in.	4 in.	5 in.	6 in.
		Cubic Feet of Free Air per Minute						
5	7.5	13	22	31	45	56	90	126
10	15.0	15	24	34	49	61	98	137
15	22.5	16	26	37	53	66	105	147
20	30.0	17	28	39	56	70	112	157
25	37.5	18	30	42	60	75	120	167
30	45.0	19	32	44	63	79	127	177
35	52.5	20	33	47	66	83	133	186
40	60.0	21	35	49	70	86	139	194
45	67.5	22	36	51	73	90	145	202
50	75.0	22	37	52	75	93	150	210
5	10.0	10	17	24	35	43	69	97
10	20.0	11	19	27	39	48	77	107
15	30.0	12	21	30	42	53	85	117
20	40.0	13	23	32	45	57	91	127
25	50.0	14	25	35	49	61	98	136
30	60.0	15	26	37	52	65	104	145
35	70.0	16	28	39	56	69	111	154
40	80.0	17	30	41	59	73	117	164
45	90.0	18	31	43	62	77	123	173
50	100.0	19	32	45	65	81	129	182

lifts up to 50 ft. being probably somewhere between the two. Flexibility, however, is an advantage, and it is often found desirable to sacrifice efficiency and decrease the percentage of submergence. For a constant length of rising main, the amount of free air required decreases as the submergence increases, and increases as the lift increases. The amount of air used does not materially vary with the specific gravity of the fluid being lifted other than in the exceptional case in which excessive velocity in the rising main and correspondingly high air volume are necessary to prevent the settlement of solids. In this case the air lift is not a suitable apparatus for the purpose.—*Engineering and Mining Journal.*

Portsmouth-Solvay Plant in Kentucky

BY THOMAS DE VENNEY
Superintendent, Pittsburgh-Solvay Coke Co., Edgarton, West Virginia

SYNOPSIS—Mines in the Warfield seam are being operated for the purpose of producing coal for coking in byproduct ovens. A commencement is to be made toward bringing the pillaring methods up to modern practice. The sanitary, dental and medical provisions in the mine village are more than usually well planned and complete.

THE FREEBURN mining plant of the Portsmouth-Solvay Coke Co. is situated in the Thacker Field, 12 miles east of Williamson, W. Va., on a branch of the Norfolk & Western R.R., known as the Tug River & Kentucky Ry. This branch crosses Tug River at Delorme and extends for two miles up Peter Creek, into Pike County, Ky. The shipping point is Arrow, Ky., and the postoffice Edgarton, West Virginia.

This plant was opened in 1905 by the Freeburn Coal and Coke Co., and was operated with more or less success until 1911, at which time it was purchased by the Turkey Gap Coal and Coke Co., which attempted to increase the output and place the mine on a paying basis by building new houses, purchasing new equipment and replacing steam locomotives and mules by electric locomotives. On June 1, 1917, the plant was bought by the Portsmouth-Solvay Coke Co. to supply the ovens at its new byproduct coking plant at Portsmouth, Scioto County, Ohio. The new company aims to increase the output to approximately 500,000 tons per year, or practically double the amount that heretofore had been mined. In view of this fact, a new tipple was immediately placed under construction, which, when completed and in operation, will make the third producing tipple of the company.

COAL IS LOWERED ON PLANES IN MONITORS

The principal seam of coal being mined is the Warfield seam, known locally as the Freeburn—the Freeburn Coal and Coke Co. being the first to produce coal from this seam. It has a wide reputation as a byproduct coking coal, being exceedingly low in ash and high in volatile matter. The market demands on this grade of coal are great, and it is the consensus of opinion that the time is not very far off when the reputation of this coal will exceed that of the famous Pocahontas seam.

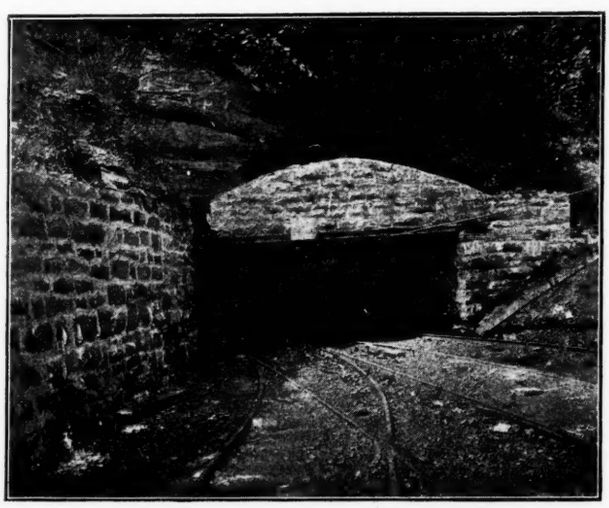
The system of mining employed at these mines is practically the same as that used throughout the Thacker field. As the Freeburn seam lies about 400 ft. above water level, the coal has to be lowered to the tipple tracks. Both the existent tipples use gravity planes for this purpose. On the plane of No. 1 tipple the mine cars are lowered down the plane and dumped at the bottom, but at the No. 3 tipple, now being constructed, the mine cars will be dumped into monitors at the seam level, and the monitors will be lowered to the tipple level. As all the coal is used for coking purposes, it is not screened and no attempt is made to prevent breakage.

The mines are worked on the room-and-pillar method, and heretofore little attempt has been made to secure the coal in the pillars; but the present plans provide for laying out the new workings in panels, the intention being to remove the pillars in the rooms as the mine advances. This system will require that all the rooms and the entries be driven on wide centers, so that pillars of sufficient size can be provided to break the roof. It has been found that when the rooms were driven on 50-ft. centers with a pillar width of 25 ft., the pillars were inadequate to give clean breaks in the roof. Consequently, all attempts at robbing up to the present have been unsatisfactory. The proposed system provides room centers spaced 70 ft. apart. The rooms will be driven 20 ft. wide and care will be taken to keep the width of the rooms regular and in perfect alignment.

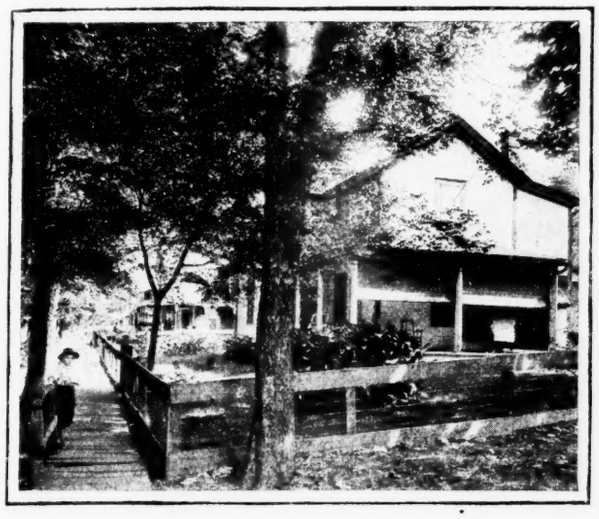
COAL IS DRILLED BY ELECTRIC ROTARY DRILLS

All coal is undercut by electric chain machines, the shortwall type being used, all cutting being done at night. The coal is drilled with electric rotary drills and is shot by the company immediately after the drilling at night. This permits all the miners to report for work each morning with sufficient coal cut and shot to insure a steady day's loading. With this method of shifting, a larger tonnage per man can be produced, the number of accidents at the face is reduced and the miners themselves are much better satisfied.

All haulage in the Freeburn seam is done entirely by electric locomotives; nine 6-ton Jeffrey-type cable-reel locomotives do all of the gathering from the face to the central parting, and from there it is hauled out by a 12-ton Jeffrey haulage locomotive. Much attention is paid to the condition of the track; 25-lb. rails are used in the rooms and cross entries and 40-lb. rails are used on all the main haulways. Men are constantly at work repairing the main haulage roads and in removing slate and retimbering where such work is needed. A space of 3 ft. is kept open on one side of the haulage roads and all slate and refuse is loaded in the mines and dumped at the slate dump.



MAIN DRIFT MOUTH AT THE FREEBURN MINE



TYPE OF SUPERINTENDENT'S HOUSE

Ventilation is provided by an 8-ft Stine multiblade fan. Many smaller fans are placed at openings around the outcrop. This plan assures an abundance of fresh air to the men employed underground, and also provides numerous splits so that the number of men on each split is far below that specified by the state law.

The Thacker seam lies about 300 ft. above the Freeburn seam, and coal is lowered from this seam to the railroad by means of a monitor plane 1300 ft. long. The system of hauling and mining in the Thacker seam is practically the same as in the Freeburn seam. The coal mined from this seam is an excellent domestic coal and its adaptability for this purpose has been widely recognized in the Middle West. But it is also suitable for railroad work. The Norfolk & Western Ry. has used the output of the Thacker or No. 2 mine as a railway-fuel coal for several years and it has given excellent results.

Another Body of Coal Below Thacker Seam

Extensive prospecting has shown a body of coal lying 30 ft. below the Thacker seam. It ranges in thickness from 4 to 6 ft., and it seems to be a split-off from the main Thacker seam. Arrangements are being made to develop it, the coal being delivered to the railroad tracks through the No. 2 tipple.

Every precaution has been taken to make the work in and around these mines as safe as possible. Strict rules are set forth for all foremen to use in the governing of their men, and care is taken to see that these rules are carried out to the letter. Competent men have been trained in first-aid and mine-rescue work; and with 800 employees, serious accidents run about one per month. Fatalities are very few, and the records taken for the past several years show a production of nearly 800,000 tons of coal to one fatal accident. With the present system of working, it is expected that this will be greatly reduced.

The main mining camp is ideally located, being on the banks of Tug River and built on level ground above the high-water marks of the largest floods. It is well drained and shaded, and is readily accessible to the mines. Additional houses have been built in a good location, extending up Peter Creek. Immediately on taking charge of this plant, the Portsmouth-Solvay Coke Co. began the work of erecting 50 new houses, mostly of a 4- and 6-room type, plastered inside throughout, electrically lighted and with running water nearby. The old houses of the Turkey Gap Coal and Coke Co. were thoroughly renovated and repaired, and made as good as new. Modern "Sanisep" closets of the L. R. S. type have been installed at all houses to insure sanitary and healthy living conditions, and plans are under way for the construction of a large filtration plant to provide pure running water for each home.

The new company prides itself on its excellent medical and surgical dispensary. It has a competent physician and surgeon to look after the health of the employees. There is also a dental parlor in connection with the dispensary, under the charge of a qualified dental surgeon.

The social conditions in the community are far superior to those in the average mining camp. There are two churches, good schools, picture house, American and foreign lodgerooms, reading room and billiard parlors. A large and commodious bathhouse, for the use of the employees, is under construction. This building is being built along the most modern and approved lines of sanitation, and when completed will be a source of much convenience to the men.

As the company has shown a kindly consideration of the needs of its employees, it has had no trouble in securing an abundance of efficient workmen. The working force was increased by 200 men during the month of July, without it being necessary to secure men by paying their transportation.

Poor Canary Is in Bad Again

The Official Bulletin, the daily "newspaper" published in Washington by the Committees on Public Information, contains the story of the bombardment of a canary bird on the West front as related by Dr. Robert Davis, a Red Cross lecturer. The anecdote, *The Official Bulletin* explains, is authorized by the Red Cross. It follows:

For more than a month on a northern sector of the line the British had been secretly mining beneath the German trenches. The work was almost complete. During the operations several canary birds were, as usual, kept in the excavation to warn the workers of the presence of firedamp, which is fatal to the birds. One little songster, however, escaped from its job, flew into the middle of "No Man's Land" and, alighting on a bush, began to sing.

Consternation reigned in the British lines. If the bird should be discovered by the Germans the work of weeks would go for naught, as the enemy could easily interpret the meaning of its presence and prepare to combat the sapping operations. The infantry was immediately ordered to open fire on the canary to destroy it. But it seemed to bear a charmed life. Even the sharpshooters failed to bring it down as it hopped from twig to twig. Finally the artillery had to be called on. A trench gun with a well-timed shell blew the bird and the bush and the song into nothingness.

[Probably the Red Cross man meant "carbon monoxide" rather than "firedamp."—Editor.]

At least twenty-one workable beds of anthracite have been identified in the State of Pennsylvania. Their maximum depth below the surface approximates 2500 ft., and they contain at best from 60 to 70 ft. of coal. However, in the "Southern" field some of the beds are estimated to reach levels 4000 ft. below the surface.—R. V. Norris at the International Engineering Congress, San Francisco, California.

News From the Capitol

By Paul Wooton

[Men of the coal industry who find it necessary to get to the national capital on business these days are invited to avail themselves of the facilities afforded by the Washington Bureau of "Coal Age," which is centrally locted in the Metropolitan Bank Building. The bureau is in charge of Paul Wooton, who is in position to be of material assistance to those who have business to transact with Government officials. Have your mail addressed care of "Coal Age," Room 703, Metropolitan Bank Building, Washington, D. C., while at the capital.—Editor.]

Improvement Shown in Car Supply

By producing 11,300,890 net tons of bituminous coal during the week ended Nov. 10, the remarkable record of the week ended July 14 was almost reached. This was a gain of 4.7 per cent. over the preceding week. The production of coke by beehive ovens is estimated by the United States Geological Survey as having been 615,432 tons for the week. Anthracite shipments continue considerably below the average set in October. During the week ended Nov. 10, 38,775 cars were forwarded. Commenting on the week's returns, C. E. Lesher, the geologist in charge of statistics for the Geological Survey and for the Fuel Administration, says in part:

"A general improvement in car supply was reported in Pennsylvania and in the Pocahontas, New River and Fairmont districts of West Virginia. In central Pennsylvania losses due to lack of cars were reduced by the roads from 20.2 to 14.6 per cent. of the present capacity. In the Hazard and other fields of northeastern Kentucky, the shortage of cars was the only factor of importance restricting output. The lack of cars is still the limiting factor in Ohio. In Alabama the ratio of tonnage produced to full-time output was 93.1 per cent. during the week of Nov. 3, in southwest Virginia the percentage was 96, and in both these fields labor shortage remained the only significant cause of lost time."

Assistant for L. A. Snead

One of the busiest men in the Fuel Administration organization is L. A. Snead, who is in charge of the apportionment and distribution section. His work has become so heavy that an assistant in the person of B. G. Hinckley, of Boston, has been named to look after all matters relating to the supply of coal and coke for New England. J. J. Storrow, the fuel administrator for New England, spent most of last week in Washington arranging for special shipments of coal for New England.

Non-Essential Industries

If any of the so-called non-essential industries are halted by Government order, it will be to conserve coal and will not be done by denying them cars in which to transport their products. This was made known officially last week by Judge Robert S. Lovett, the administrative officer in charge of priority shipments and the temporary chairman of the War Industries Board. His statement is as follows:

"While the situation may change, I am not at this time contemplating any further action with respect to transportation of non-essentials. Priority Order No. 2 with regard to open-top cars went as far as it seemed wise to go in dealing with that problem by restricting the transportation of non-essentials. Conditions, however, will be constantly observed. Whether the coal shortage requires restriction of the coal supply of non-essential industries is a question for the Fuel Administrator, Dr. Garfield, to determine; and if any priority orders become necessary in the furtherance of his policy in that regard, they will be made only upon his request.

"As to the War Industries Board, apart from my action under the Priority Act with respect to transportation, I may say that the industries of the country would seem to be justified in assuming from the action of the board in the matter of copper and steel prices and its record generally to date, that it is the desire and policy of the board carefully and liberally to conserve the interest and welfare of industries. I feel safe in saying that the board will take no action designed to eliminate any non-essential industry without reasonable notice and an opportunity to be heard."

Dr. Garfield, after pointing out that the use of coal by each consumer at the peace-time rate would mean that the supply for this winter will be 50,000,000 tons short, said:

"Arbitrary limitation is a last resort and to be avoided if possible. In many cases industrial concerns have already begun a voluntary curtailment of their use of coal. Such efforts will receive the fullest support and encouragement of the Fuel Administration, including technical advice on the use of fuel. As I have stated before, the Fuel Administration is determined that sufficient coal for the war, for public utilities and for domestic consumers shall be provided.

"The way to prevent those losses incident upon limitation of industry is for every consumer of coal to cut off waste and unnecessary consumption with an iron hand and to start on this intensive course of conservation without a moment's delay."

No Changes in Coke Price Schedule If Cost Sheets Are Not Filed

No applications for alterations of the coke price schedule will be entertained by the Fuel Administration unless the following regulation is complied with:

"If a change in the price of coke is desired, the aplicant should first procure the Federal Trade Commission's uniform cost sheet. These should be filled out for the calendar year of 1916 as a whole and for 1917 month by month to the date of application. The cost sheets may be secured from either the Federal Trade Commission or the Fuel Administration."

Railroads Not Efficient

The Fuel Administration has received complaints from some quarters, including several of the coal operators, that the railroads were not obtaining the highest efficiency with the facilities at hand, and a virtual pooling of cars and trackage area has been suggested. Some railroads, it has been asserted, have largely "worked their own territory," even when the best results were not obtained for the general movement of coal and the relief of congested conditions.

These matters, it is understood, will be taken up by the Fuel Administration with the railroads and their representatives on committees here, such as the Railroads' War Board, and a thorough coördination of effort sought. It is believed by some that much can be accomplished in this direction.

It is possible that the problem may come before the Interstate Commerce Commission if readjustments in the situation are found necessary and do not come voluntarily. It is the intention of the Fuel Administration to see that the greatest results are obtained from the present trackage and car supply.

Basic Prices for Byproduct Coke

The formal order announcing basic prices for byproduct coke was issued Tuesday. It reads as follows:

"Byproduct Coke—Except for byproduct coke produced in New England, the maximum prices for each grade of byproduct coke, f.o.b. cars at point of production, shall be the sum of the base price for the grade, and the freight rate from the competing beehive coke district which takes the lowest freight to the point where such byproduct coke is produced. The base prices are as follows: Run of ovens, $6; selected foundry, $7, and crushed over 1-in. size, $6.50.

"Gas Coke—The maximum price of gas coke sold for industrial or metallurgical use shall be fixed at the price established by the United States Fuel Administrator for the corresponding grade of coke produced in byproduct ovens. The maximum price of gas coke sold for household purposes shall be the price established by the United States Fuel Administration for anthracite coal in the same locality."

This order became effective 7 a.m., Nov. 19, and will remain in effect until Jan. 1, 1918, or until superseded by further order.

All coke price orders so far issued by the United States Fuel Administration remain effective until Jan. 1, 1918.

Miscellaneous Washington Notes

A Bureau of Mines rescue car has been ordered to Camp Meade, near Annapolis, Md., so that members of the mining regiment may receive special training in the use of oxygen breathing apparatus.

* * *

With the appointment during the past week of a fuel administrator for New Jersey, Florida and Maryland, all the states are provided with these officials. As rapidly as possible the work of the Fuel Administration is to be decentralized and the state administrators charged with the responsibility of handling much of the detail which has been coming before the federal administrator.

* * *

Cancellation of the late priority order is expected in the near future. F. C. Baird, in charge of Lake shipments for the Fuel Administration and W. H. Grovermann, the secretary of the Northwestern Coal Dock Operators' Association, are in Washington discussing the northwestern situation. The lifting of the Lake priority order, Dr. Garfield announces, will give relief to the section of the country where seventy-five per cent. of the war work is being done.

* * *

Every effort is being made by the explosives section of the Bureau of Mines to prevent loss of production as a result of the enforcement of the explosives law. There is no way, however, of permitting Austrian miners to be licensed. Miners of that nationality may be employed where shot-firing systems are used, however, or where the explosive is issued by the licensed foreman. In cases where this arrangement is not possible, it is believed that the Austrian employees can be transferred to work in which they are not required to use explosives, without any important interference with the mine's production.

* * *

Demands of the Chesapeake & Ohio R.R. for coal will be filled pro rata by the mines in the proportion that their output bears to the total requirements of the road. An order to that effect was issued Nov. 19 by the Fuel Administration. At the same time an order was issued to insure an adequate supply of coal for the use of the Lehigh Valley R.R. This road is supplied by mines furnishing coal under contract which are not located on its own lines. These mines are ordered to give priority to the demands of the Lehigh Valley R.R., even over requisitions for coal to supply the railroads upon which they are located.

* * *

Each consumer of coal who thinks he is being overcharged by his dealer is being encouraged by the Fuel Administration to make a report to the coal committee in his locality or to the state fuel administrator. So as to judge whether or not these complaints are just, it has been found necessary to call upon retailers to file with the local committee or with the state administrator a full statement of costs. That these cost statements may be checked up uniformly, each state administrator will be allowed the services of an authorized agent of the Federal Trade Commission.

The Labor Situation

General Labor Review

The two recent events in the labor situation which stand out most prominently are the signing of the conditional agreement between the anthracite mine workers and the operators and the backdown in the Southwest of the unpatriotic mine workers before their more generously minded fellow workmen.

The anthracite scale readjustment is given in another column. The amount of the advance varies so much with different occupations that it is impossible to brief it in any way. It may be said, however, that the cost of anthracite coal will be advanced between $35,000,000 and $40,000,000 a year by the readjustment. There is no sign of a penalty clause, and the whole agreement hangs on the granting of an increase in price equivalent to the advance in wage.

Wage Increase Must Come from Consumers' Pockets

The attitude of the labor leaders in this matter is most reasonable, and it shows that they have definitely parted with the idea that increased wages can be secured from the capitalist's profits. They show manifestly their belief that such advances must come out of the consumers' pockets and must increase the cost of living.

A workman recently wrote us a letter protesting against the attitude of *Coal Age* regarding the increase in wages in the bituminous region, and taking issue with the statement that wages should not be permitted to increase faster than the cost in living unless the greater productivity of labor justified an increase.

How Wage Increases Must Be Passed Along

In this letter the workman said that men were not "work animals," to make such a bare living as would just keep them from starvation but not furnish them with a chance to save and to advance their mental and physical well-being. The answer is easy. If the aforesaid mine worker is a work animal at $3.60 a day, the man who is getting $2 a day is still more of a "work animal," and by raising his rate of wages to $5 without increasing his contribution to the public, the mine worker is intensifying the struggle of the $2 man so that his quality of "work animal" is made the more bitterly apparent.

This is getting clearer to everyone day by day. The war is showing us that product and wages must be regarded as inseparable.

How Patriotism Won in Southwest Districts

The Southwestern miners have gradually been brought to see their duty in this perilous time. They had been allowed to get out of hand. If only someone had talked patriotism before the recent convention instead of waiting till it was held less harm would have been done in the Southwest and the Middle West.

The convention started most inauspiciously by electing Alexander Howat, the irreconcilable, as chairman of the meeting, which opened at the Labor Temple, Kansas City, Mo., on Nov. 12. D. A. Frampton, the president of the Missouri organization, in his address urged all mine workers and labor leaders to refrain from attacks on the mine operators and to strive to find a ground of settlement. The convention, as stated last week, voted against the penalty clause advocated by the Fuel Administrator.

There was then no logical step to take except to declare a strike, but the delegates hesitated against taking so disloyal a step, knowing as they did that they would be striking against the Government and not against the operators. When, therefore, the matter came to a vote, by 143 to 126 they defeated a resolution that would have given the district presidents right to call a strike if the Southwestern Coal Operators' Association refused to accept the so-called Kansas City agreement in which the penalty clause was omitted. Later they accepted the clause. Mr. Garfield is elated. He says that the penalty clause is almost everywhere provided and that the future is assured. Most of those acquainted with the situation have no faith in the penalty clause. They firmly believe, however, in the patriotic sentiment that animated the workmen who voted for it. The Southwestern mine workers who reversed their action did it out of patriotism, and that fact is a certain sign that the men intend, for the present at least, to do their duty, penalty clause or no penalty clause.

Men Would Work if Only Chance Were Given

No important change has marked the labor situation in the central and western Pennsylvania districts recently. The strikes at the mines on the Salisbury branch of the Baltimore & Ohio R.R., in Somerset County, are now about over. Nearly all the men have returned to work and are employed "open shop."

Unfortunately, readiness to work does not mean large tonnage, for the car supply during the past week has been worse than for some time. Not only railroad cars are in short supply, but there has also been an unusual scarcity of craft at those mines which ship their coal by the river. Heavy fogs during the early part of last week greatly hampered the movement of both cars and river craft.

Loyal Mountaineers Endorse Penalty Clause

In West Virginia the Kanawha Coal Operators' Association met the United Mine Workers of District No. 17 at Charleston, W. Va., the first of last week. They arranged the details of the recent advance in wage scale and adopted a penalty clause similar to that in force in District No. 5 (western Pennsylvania).

The Grafton Coal Operators' Association, in the northeastern corner of the state, also met with the mine workers of the Grafton district on Nov. 14, the meeting being held at Grafton, W. Va. They made a new contract with the same penalty clause and they settled all the details of the new scale except the question whether the 15 per cent. increase in yardage would apply to the differential in the mining rate between room and entry work. The conferees agreed that both sides would seek further light on the subject and meet again. If then they cannot reach an agreement, they will arbitrate the matter. The subject was argued by both sides in a friendly and conciliatory manner.

The Alabama representatives of the United Mine Workers of America were notified by wire on Nov. 14 that the National Fuel Administrator desired a conference on Nov. 19.

The mine workers and operators in the northwestern coal field of Wyoming have agreed to accept a contract modeled on the Washington joint agreement, of which the automatic penalty clause forms a part.

Anthracite Mine Workers Get Raise

On Nov. 17 word was received that the anthracite mine workers had made a new scale with the operators to go into effect should the Fuel Administrator agree to grant an increase in price to offset the greater cost of production resulting from the wage increase.

No one could be otherwise than pleased, because the patriotism of the anthracite mine workers has been in happy contrast to the sedition of many of the mine workers elsewhere, and the anthracite mine workers were even more entitled to an upward revision of the wage scale than were their bituminous brethren.

The agreement follows:

Whereas, On May 5, 1916, an agreement was entered into by the parties hereto covering wages and working conditions in the anthracite fields of Pennsylvania for the four-year period beginning Apr. 1, 1916, and ending Mar. 1, 1920; and

Whereas, By reason of conditions that arose as a result of the war, the parties hereto, under date Apr. 25, 1917, entered into a supplemental agreement modifying the wage compensation provided in said agreement of May 5, 1916; and

Whereas, By reason of further changes in conditions which have arisen since the date of said supplemental agreement of Apr. 25, 1917, the parties hereto have deemed it advisable and necessary to make further increase in the wage compensation provided in said supplemental agreement as hereinafter more specifically set forth; now, therefore,

This agreement witnesseth that, in lieu of the voluntary advances made under the agreement of Apr. 25, 1917, the following advances are purposed to be applied to the rates established under the agreement of May 5, 1916,

Miners' Wages Increased 30 to 35 Per Cent.

a. Contract hand and machine miners shall be paid an advance of 25 per cent. on their gross earnings. b. Consideration miners shall be paid an advance of 25 per cent. on their earnings. c. Contract miners' laborers shall be paid an advance of 30 per cent. on their earnings. d. Consideration miners' laborers shall be paid an advance of 25 per cent. on their earnings. e. Day machine miners' laborers, who received not less than $2.72 per day, shall be paid an advance of 25 per cent. on their earnings.

f. Outside engineers working a 12-hour day cross-shift and firemen shall be paid an advance of $1 per day for each day worked. All other outside company men, who received $1.54 or more per day, shall be paid an advance of 90c. per day for each day worked. g. Inside engineers and pumpmen, working a 12-hour cross-shift, shall be paid an advance of $1.10 per day for each day worked. All other inside company men, who received $1.54 or more per day, shall be paid an advance of $1 per day for each day worked. h. All employees paid by the day, who received less than $1.54 per day, shall be paid an advance of 60c. per day for each day worked.

i. Monthly men coming under the agreement of May 5, 1916, shall receive an advance per day for each day worked, equivalent to that provided for their respective occupations under f and g.

j. The advances of $1.10 per day, $1 per day, 90c. per day and 60c. per day, provided above, are to be applied to a day, whether eight hours or more, as established under the agreement of May 5, 1916; any proportionate part of a day to be paid a proportionate part of the advances herein provided.

Schedule Recognizes Stripping Contractors

k. The employeees of stripping contractors, paid by the day, working on the basis of a 9-hour or 10-hour shift, shall be paid the same increase per hour for each hour worked that is provided for outside company men working on an 8-hour basis.

It is understood and agreed that, except as herein provided, all of the covenants and conditions of the agreement of May 5, 1916, shall remain in full force and effect. And it is further understood and agreed that this contract will become effective only on condition that the selling price of coal shall be advanced by the United States Government sufficient to cover the increased cost of production and will not take effect until the first day of the pay period following the order granting such increased price. Subject to the foregoing provision, the contract will remain in effect during the period of the war, or until Mar. 31, 1920, in case the war is not terminated before that date.

Relation of Anthracite to Bituminous Increases

The intention apparently was to adjust the wage so as not to call on the public for more than 45c. per ton, the increase granted in the price of bituminous coal. The public will have to pay $40,000,000 a year more as a result of this wage revision.

The increase to day workers is roughly as large as in the bituminous region. There the $2.98 and $3 men received an increase of 60c. to 62c. and later of $1.40 a day, making $2 to $2.02 in all, or 66.67 to 67.78 per cent. An increase from $1.54 to $2.54, the advance granted inside employees in the anthracite region, is roughly identical with this.

In the thin vein district of western Pennsylvania the rate fixed under the McAlpin agreement was 67.64c. per ton. Under the agreement of Apr. 17, 1917, this was increased by 10c., and under the recent agreement 10c. more was added, making in all an increase of 20c., or 29.56 per cent. Similarly, the machine mining rate in western Pennsylvania increased 20c. on 50c., or 40 per cent.

Will Administrator Demand Penalty Clause?

The conferees evidently felt that the public would not consent to an increase in the cost of anthracite any greater than had been permitted in the cost of bituminous. Consequently as anthracite involves more labor and even more labor cost, despite the lower scale, it was necessary to grant a lower percentage increase in wage.

It is not safe to forecast the action of the Fuel Administrator. Will he or will he not call for a penalty clause such as he believes is so absolutely essential in the bituminous region? Will he recognize that the compelling force of the anthracite mine workers' patriotism is worth a dozen contract clauses?

Still Not Quite Satisfied with Wage

Illinois miners appear to be getting ready to demand another wage increase on the ground that the last one has been absorbed by the merchants in mining towns and communities who have increased the selling prices of commodities to an equal or greater extent than the amount of the increase. The Executive Board of the Illinois organization adopted resolutions a few days ago at a meeting at Springfield, Ill., in which veiled notice is served to that effect.

The resolutions declared that the recent advance granted to the miners "for the purpose of stimulating production" and enabling the miners to provide for themselves and their families is being systematically filched from them by the mining town merchants, "thereby rendering the advance ineffective as a means of accomplishing the purposes for which it was designed."

In the following paragraph there is more than a hint of a purpose to demand a further wage advance and a threat to hamper production unless it is granted. It reads: "Be it further resolved, that as long as individuals or groups of individuals are permitted to exploit the people by charging exorbitant prices for the necessaries of life, just that long will it be impossible for us to guarantee to the Government the results which are so necessary in this the hour of our Nation's need."

Frank Farrington, president of the Illinois organization, has sent a circular letter to all the unions of the state, inclosing a copy of the resolutions, and urging the necessity of taking "such action as will effectually curb the activities of the unscrupulous merchants and speculators who place self-interest and private gain above the public weal."

The letter suggests that committees be appointed to compile statements showing the prices charged for household necessities, to be forwarded to Food Administrator Hoover, accompanied by a letter or resolution asking him to investigate and act.

The Illinois Coal Operators' Association and the Executive Board of the United Mine Workers, at meetings held at Springfield during the past week, discussed the penalty clause, concerning which there is dissatisfaction on the part of the miners. They have been watching the Southwestern district.

Decision Given to Hoisting Engineers

Charles P. Neill, Washington, D. C., umpire of the Anthracite Conciliation Board, has handed down a decision granting a 7 per cent. wage increase to all the hoisting engineers at anthracite collieries. The controversy arose over the practice of using one engineer on a 12-hour shift, another on an 8-hour shift and another on the 4-hour interval of the twenty-four. Three per cent. increase was given on the 8-hour shift and 7 per cent. on the 12-hour day, the men contending that all were entitled to the 7 per cent.

Editorials

An Object Lesson

THE Fuel Administrator's order of Nov. 6, making mandatory the use of the Tidewater Coal Exchange, draws fresh attention to the tremendous difficulties that beset rail movement in the whole eastern half of the country. The order states explicitly that "the production of coal intended for transshipment . . . . at Hampton Roads, Baltimore, Philadelphia and New York . . . . is being restricted"; that dispatch is poor and shipments reduced; that congestion and delays are so serious as to affect the country's part in the war; that naval colliers and army transports are unreasonably and unnecessarily detained at the piers, and that better handling is imperative to avert a coal scarcity.

At Hampton Roads, where the Government relies to greatest extent on volume and adequate service, the situation is grave. Like the pint bottle and the demijohn, a railroad can deliver no faster than its terminal facilities. If cars are not moved coal is not mined; the effect is far-reaching and disastrous.

The Norfolk & Western Ry. is a great coal artery. It serves West as well as East; its output is known in all the seas. Recent figures are therefore the more interesting and for comparison cannot be over-emphasized. Here is a statement of loaded cars of 50 tons capacity, each shipped from mines in the Norfolk & Western coal field during the first nine months of the years 1915, 1916 and 1917:

	1915	1916	1917
Pocahontas field	228,061	264,678	248,295
Tug River field	64,167	71,519	64,129
Clinch Valley field	26,434	25,516	21,236
Kenova field	15,013	16,989	13,313
Thacker field	57,383	72,999	73,785
Total	391,058	451,701	410,758

There is therefore a total falling off during the nine months of 1917, as compared with the same period of 1916, of 30,943 railroad coal cars of 50 tons each, or a total loss in tonnage of 1,547,150. All the districts, aside from the Thacker, show a loss; and without doubt this field would show a proportionate reduction but for an increase in the number of mines therein. While it cannot be said that there is an abundant supply of mine workers in any part of the region served by the Norfolk & Western, yet competent authorities assert that the number of miners in these districts would have been able to produce a much greater tonnage but for the frequent embargoes against Western shipments and the consequent reduction in car supply. Certainly, as a region, the Norfolk & Western districts have been notably free of labor disturbances; it is therefore all the more clearly a case of inadequate equipment.

There are as many cars on the Norfolk & Western as last year; doubtless there are more; but the difficulty lies chiefly in the movement over connecting lines. The failure to get cars on connecting lines to destination, and the fact that they are not returned to the mines as quickly as in 1916, is due in large measure to insufficient trackage both on the lines and in the yards. It will be recalled that after the panic of 1907 James J. Hill, of the Great Northern Ry., made the statement that it would take $1,000,000,000 a year for five years to put the railroads and their yards into the shape necessary to handle a maximum business. Railroads, like manufacturing plants, must have certain profits for extensions, and when profits are reduced no extensions can be made.

The policy of repression so long followed by the Interstate Commerce Commission is now bearing legitimate results. The new capital to put two, three and four tracks where needed was denied; railroad yards were left in a *status quo*. And now the country is given an object lesson. Will the Interstate Commerce Commission see the point?

Weeding Out the Inefficient Mine

IF the wagon mine, run for the purpose of filling railroad cars with coal and not for local wagon delivery, should disappear, it is not likely that the nation will suffer. Most of the work done in these little gopher holes is inefficient in its use of the miner's time and extremely wasteful of the time of teamsters. After all, the measure of production is not in terms of mines or miners, but of railroad accommodation; and it is this accommodation that the wagon mine restricts.

If the wagon-mine operator had a large bin capable of holding a railroad car load or two, he could fill any car run into the siding with coal in a few minutes, and as soon as it was delivered to him. In that way it could be removed immediately, and even if not taken from the siding it could be shifted from point to point at pleasure. Thus the use of a bin would not only enable the railroad car equipment to be used efficiently, but would save siding trackage and reduce the work of the motive-power department, making its locomotives perform a larger service.

This is how it appeared to the Buffalo, Rochester & Pittsburgh Ry., in central Pennsylvania. The company agreed to permit the wagon loaders to go on with their work if they separately or jointly built bins. But the plan did not appeal to them. They have decided to test their rights before the Interstate Commerce Commission.

The matter is not one for indifference. The output will never be satisfactory till the equipment of the railroads is used with efficiency. It is to be hoped that the commission will decide in favor of the genuine shipper and consumer by ruling out the pesky wagon shipper who merely plays at mining. When he gives some earnest of his intention to do business fairly with the railroad, by building a bin and loading the cars supplied with promptitude, then and only then will he be entitled to all the rights of those who fill cars promptly and in numbers and do it along a track which they have constructed at great expense to themselves.

A Queer Blunder Even for Mr. Ford

A MAN who has made a reputation as enviable as that of Henry Ford, would do well to let it rest. He should be careful lest any further public appearance would undo the first impression made on the public.

The readers of newspapers have at length ceased smiling about the promise Mr. Ford made that he would "get the men out of the trenches before Christmas" by a peace mission officered mostly by the most impracticable visionaries who could possibly be selected.

Now it appears that Henry Ford has given an interview in which the interviewer, quoting him, says: "At the present time the coal shortage is the weak link in the whole chain of the nation's preparedness program. There is plenty of coal in the mines, but there is no adequate scientific means for getting it out speedily in sufficient quantities.

"The question of whether or not coal operators are really desirous of seeing a large output is problematical, but even with their coöperation and good will it is doubtful whether present methods used for extracting coal can properly meet the emergency. Coal is now blasted or cut in the mines, but it is then taken out practically by hand.

"If Mr. Ford were placed in charge of getting out coal, these crude methods would speedily be replaced by systematized scientific procedure. There are many ways, Mr. Ford believes, for getting coal speedily in large quantities. It could be taken out by machinery by an endless belt system and by sluicing it out through pipes by hydraulic power."

The public has recently been talking about coöperation among the allies. Perhaps the new war council could induce even the redoubtable Mr. Ford to keep quiet and by his timely silence prevent a universal rubber famine such as would result from such a wasteful use of belting. The rubber product of the whole world if all placed at the disposal of this would-be Fuel Dictator for the sole needs of the United States would not serve the purpose he has in view.

As for the hydraulic proposition, Mr. Ford had better lay in a stock of dynamite for cleaning out his coal cars if in the winter they are to be loaded hydraulically.

The slur about the coal operator is quite uncalled for. The real culprits are quite willing to confess. The railroads are to blame. They do not have the equipment. They in turn rightly declare that Mr. Ford's industry by taking up coal cars for the transportation of pleasure cars is partly to blame for the shortage. They blame also crippling legislation and the decisions of the Interstate Commerce Commission, in which complaint they are justified. Why blame the operators? They have adequate means of getting the coal out of the mine if the railroads will only provide the means to transport it to market.

We do not know what Mr. Ford means by getting out coal *by hand*. If that is how the operator brings out his coal, then that is the way in which the railroad takes coal to market. Perhaps Mr. Ford would like to see his cars going to Squedunk on a rubber belt or through a pipe line. The incomparable Mr. Ford would do well to restrict himself to the manufacture of small pleasure cars. As Fuel Dictator he would be a conspicuous failure.

No Wonder We Complain, Mr. Garfield

WE RECENTLY had occasion to inquire of R. G. Dun & Co. as to the progress of prices as marked by their well-known index, which is a weighted estimate based on 350 articles. On April 1, the index stood at 190.012; on Oct. 1, at 219,679, an increase of 15.613 per cent.

It is interesting to know that during that time the price of coal has been drastically reduced, but it has had no effect on the kiting of prices. The rascals who cried so lustily about coal prices and secured their reduction, picked up the dollars the coal men dropped and took still others from the public.

We confess, Mr. Garfield, that we feel that we should not be singled out for such treatment and that when the coal man is relieved of his money the profit should go to the public in general and not to the war profiteer.

The index rose 15.6 per cent., yet the day worker in the mine got 38.8 per cent. of an increase, though his expenses probably did not rise as much as the figures in the index, for the mine worker paid no more for rent, coal, powder, squibs and doctor's charges.

Regulation of coal prices is just as unfair as regulation always is. It provides for greater profits to the unregulated and smaller profits to the regulated. As a result the regulated industry languishes, and the public pays the bill.

And yet, Mr. Garfield, we must concede that you have been far more reasonable and more prompt in dealing with the coal industry than the Interstate Commerce Commission with the railroad industry.

Assistance Needed for the Railroads

ONE cannot conceive how any exception can be taken to giving the railroads the increased rates they are asking. If we argue with Great Britain that profits should be only 20 per cent. greater during the war than they were before, then the railroads have proved their contention; for they are not making nearly the profits they made before the war commenced.

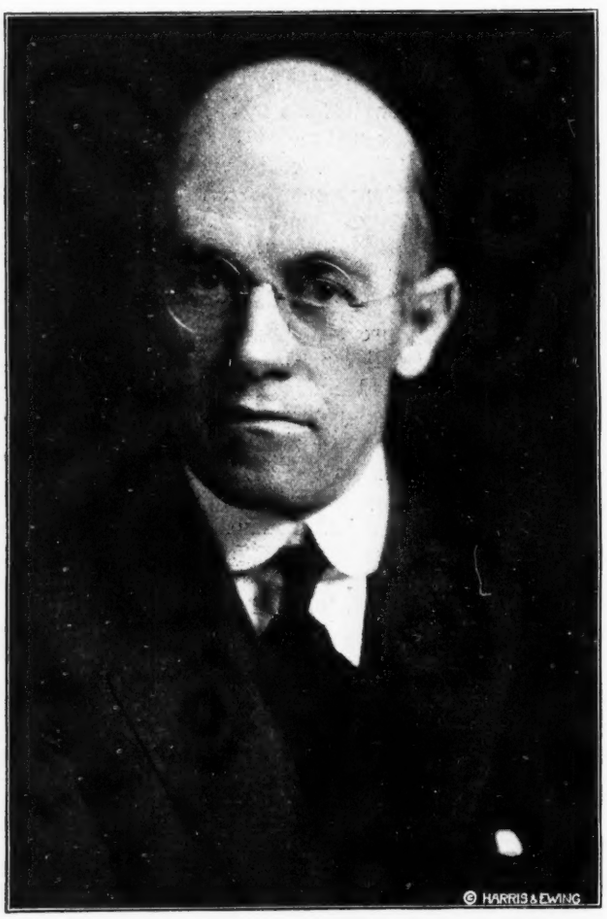
If we argue that profits should be reasonable, then the transportation rate should be increased because the profits have reached long ago the vanishing point. If we declare that freight rates should mirror costs of operation, then again the railroads win, for both wages and fuel rates have increased immensely.

If we urge that securities should earn enough to prevent them from depreciating in value, then the railroads have a convincing argument; for the shrinkage in the value of railroad holdings has been deplorable, the drop in market value since the war began amounting to about three billions of dollars. If we demand that all industries making profits must be helpful to the war, where can we find any more deserving?

A dollar spent to build up our railroads or our ocean transportation is worth more to the nation than a dollar spent for ammunition. Before long, if we do not enable our railroads to buy new equipment, and maintain what they have, we shall have a collapse in our circulatory system. That for an individual means death, and it means no less for a nation. We do not want a hardening of the arteries. A corpse, though it be armed with brass knuckles, is a danger to no one.

Garfield's Right-Hand Man

Harry D. Nims, who is the ranking member on the staff of the Fuel Administrator, has become widely known among coal operators. Since fuel matters were placed in the hands of Dr. Garfield, it has been to Mr. Nims that the operators told their troubles first. Whenever possible Mr. Nims tries to meet the situation presented, but if it is found that the matter should be brought to the personal attention of Dr. Garfield, Mr. Nims attends to the arrangement of the case so it can be presented to the Fuel Administrator in concrete



HARRY D. NIMS, OF THE FEDERAL FUEL ADMINISTRATION

form. In this way many hundreds of coal men have come to have a personal acquaintance with Dr. Garfield's "chief of staff."

During the early days of fuel regulation there was a good deal of comment among coal operators unfriendly to Dr. Garfield and to Mr. Nims. There has been a very decided change in this attitude, however, and most operators who have been called upon to deal directly with the Fuel Administration are of the opinion that if the coal business of the country had to be put in the hands of men with no experience in the industry that it would have been hard to find any more acceptable men than Dr. Garfield and Mr. Nims.

COMPILATION OF FOOD COSTS in 24 principal cities of the United States recently made public by the New York City Health Department, shows that "the cheapest dietary" for a family of five averaged $9.43 a week.

SOME INTERVIEWS

This One with a Mine Owner

When I entered his office, I found him busy with his auditor checking over statements required by the Government showing car-load shipments being made on contracts, the prices charged per ton, and how the contracts had been obtained.

"So you are helping the Government, are you?" I ventured by way of introduction.

He received the intended pleasantry in very bad grace, and informed me that this was no time for joking.

"Well, then, the Government must be helping you," I put in.

Oh! what a frown he gave me for that.

I decided that it was time to get down to business.

"Mr. Baron," I said, "I am here for the purpose of giving you an opportunity to subscribe to the Y. M. C. A. Soldiers' Fund."

Instantly the frown disappeared, and he thawed out.

"So you think we are a pretty bad lot, do you?" he asked while waiting for his secretary to bring him his checkbook.

"Judging by the conversations I hear everywhere, that is the opinion the public in general has of your class," I replied.

"And what is the worst they say about us?" he inquired.

"Well, they say that the only big men from your ranks who have offered their services to the Government at $1 per year tried to double-cross the big men of that same Government at the very first opportunity. They didn't seem to realize that the Government was in sore need of help, and they haven't realized yet that this is no time to talk of profits. Even now these spokesmen of the coal operators are talking of wagon-mine costs and the outrageous demands of labor when coal is the thing that the Government needs, and which they alone can supply."

At this point he interrupted me. "See here, young fellow," he said, "that first statement about the double-crossing suggests the I. W. W., but your last statement is so accurate that it stings."

This last he said with so much feeling that I could no longer refrain from telling him that I, too, was connected with the coal-mining industry and therefore realized the seriousness of the criticism heaped upon us so frequently.

Just then his secretary returned, and our talk drifted back to the Y. M. C. A. campaign.

I learned that Mr. Baron had only one son, and he was then probably on his way to France or, if not, soon would be. That son meant more to the father than all of his earthly possessions, and he told me that he would willingly give all that he possessed if only his boy could come back to him at the end of the war. He would welcome him even as a cripple, but, oh! if he could only come back smiling.

"Now you see," said the father, "why it distresses me so to have people intimate that we coal men are shutting our eyes to the fact that we are tying the Government's hands by not giving them the coal necessary to carry on the war—I who have my all at stake.

"No, we are not shutting our eyes to the facts, but we are groping in the dark; and each time as we reach out ahead we utter a prayer and we put our soul in it. If we could increase our outputs by turning over our mines to the miners—union or nonunion—lock, stock and barrel, I for one would say let them have them: and if these same miners wanted me along with my mine, they could have me and no questions asked.

"Some of my miners and some of my miners' sons are over there with my boy, and they may go to their deaths together, and rest in a common grave; if they come back, they will come back together, and we will welcome them together."

Wholesale Coal Trade Association Pledges Aid to Government

On Nov. 16 at the Whitehall Club, New York City, 150 members and guests of the Wholesale Coal Trade Association of New York discussed the coal situation and pledged themselves to coöperate with the Government toward a successful conduct of the war. James A. Hill, president of the association, presided. John D. A. Morrow, general secretary at Washington for the National Coal Association, the operators' organization, and Noah H. Swayne, second commissioner at Washington for the National Coal Jobbers' Association, were the chief speakers.

Both Mr. Morrow and Mr. Swayne urged the need of more effective railroad transportation, the former putting himself on record as being in favor of the Government lending as much money to the railroads as they need to put them on the most efficient basis of operation possible.

"It is the judgment of the coal trade," said Mr. Morrow in one part of his address, "that this nation and her allies will win the war by organization, or they will lose it by lack of organization." Arrangements were made at the close of the meeting for the drawing up of a set of resolutions, to be sent to the President of the United States and a copy to the Fuel Administration, assuring them of the association's coöperation in every particular.

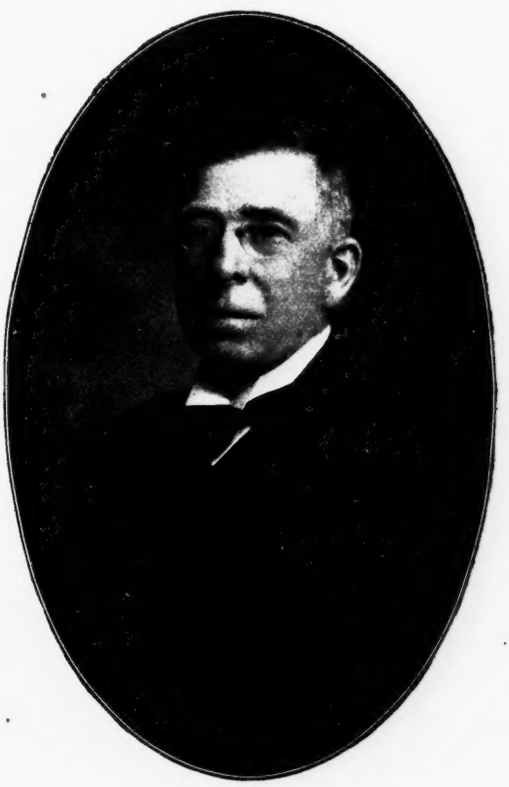
Some Fire Prevention Rules

A vast campaign is being conducted by the National Board of Fire Underwriters in coöperation with the Council of National Defense to acquaint every American with the fact that it is a patriotic duty to prevent fires. Many industrial employers are behind this movement, and the men of the mining industry should join in.

Here are some of the ways in which every mine worker can aid: (1) Learn the mine safety rules and observe them. (2) If you discover a fire, give the alarm promptly. If you don't know how to do this, ask to be shown. (3) Don't smoke where it is not permitted. (4) Never drop a lighted match, cigar or cigarette; be sure it has no spark left before throwing it away. (5) Report suspicious strangers seen about the plant. (6) If you notice any unusual smoke, the overheating of any machine, or any other accident, notify the foreman or man in charge at once. (7) Carry your precautions into your own home; keep your house and yard free from rubbish.

Joseph V. Birtley

Joseph V. Birtley, former superintendent of the Pancoast colliery at Throop, near Scranton, Penn., died Oct. 29, aged 71. The late Mr. Birtley was born in Edinburg, Scotland, Oct. 8, 1846, thus rounding out man's allotted three-score and ten years. He came to America when 9 years old with his parents, who settled at Beaver Meadow, near Hazleton, Penn. When 18 years old, young Birtley came to Scranton, when for a number of years he worked for the Delaware and Hudson Coal Co. as general inside foreman of its Marvin mine. Twenty-eight



JOSEPH V. BIRTLEY

years ago Mr. Birtley became general superintendent of the Pancoast colliery, which position he held until Aug. 1 of this year.

The deceased was considered one of the most advanced and best-informed mining men in the northeastern part of Pennsylvania. He was in charge of the Pancoast mine when the fire that started in the underground engine room caused the death of 73 men, and although he did everything possible to combat the fire and save the men, he was handicapped in the struggle until too late, because facilities were lacking to contend with such an unexpected holocaust.

Mr. Birtley was ever active in behalf of the men under him, and in movements for bettering the community. He leaves a host of friends in the coal industry who will miss him.

THE AVERAGE WAGE of male workers in Germany, from March, 1914, to September, 1916, increased 46 per cent., to $15.10 per week; of female workers, 54 per cent., to $7.06 per week. Food costs increased at least 100 per cent. in the same period.

Discussion by Readers

Rotary Dump at Shaft Bottom

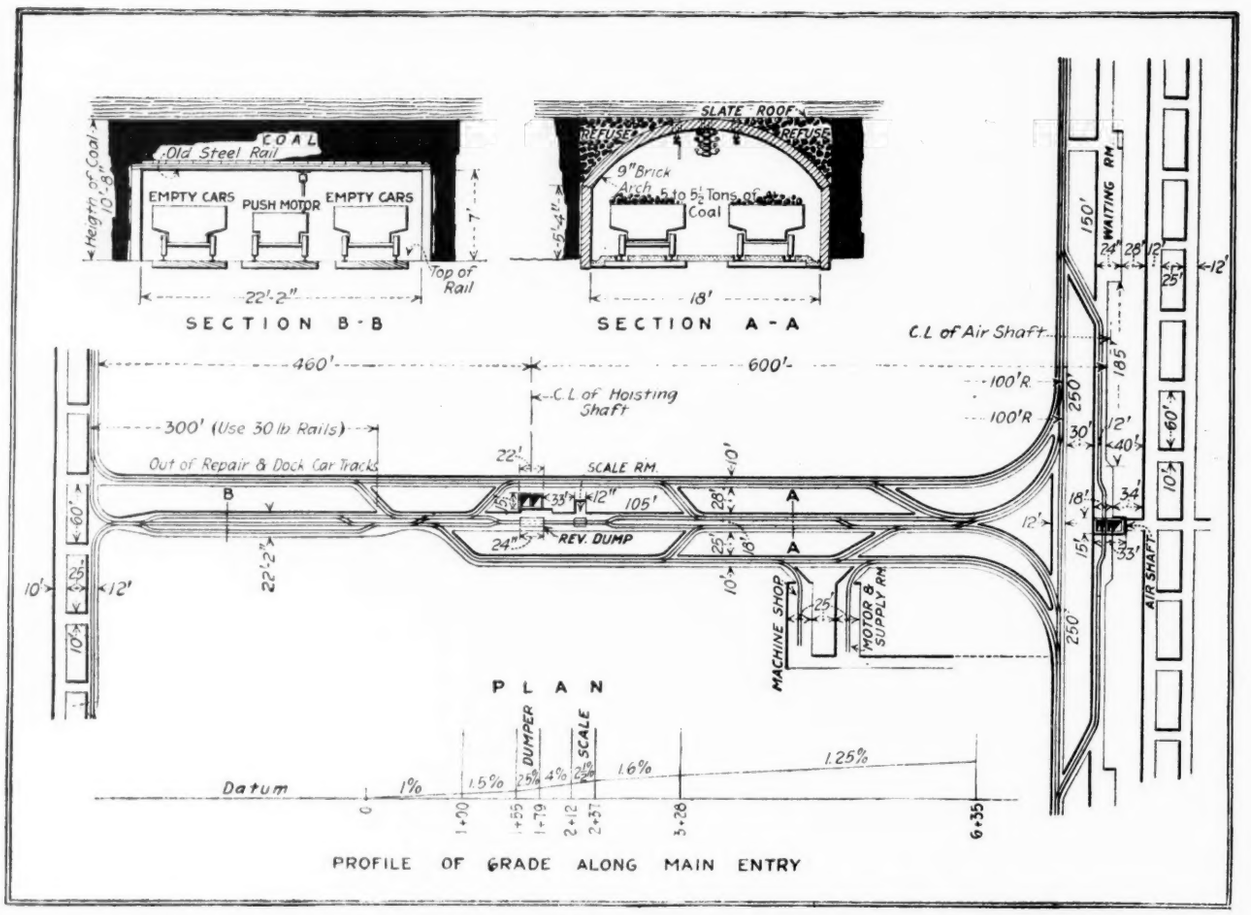
Letter No. 1—I read with interest the inquiry in regard to installing a rotary dump at the bottom of a shaft or slope, *Coal Age*, Nov. 3, p. 779, and gladly respond to the request for such information as can be given by those who have contemplated an installation of this kind.

The accompanying figure shows the general plan for installing a rotary dump at the bottom of the hoisting shaft of a large mine. In this plan the air shaft is located on the line of the main entries. As shown on the right of the figure, there are four of these main entries, two of which are intake airways, while the other two serve for the main return air-courses of the mine. The air shaft is large and divided by concrete partitions. The downcast compartment in this shaft has a sectional area of 130 sq.ft. and the upcast compartment an area of 200 sq.ft.

The hoisting shaft, as shown in the figure, is located on line with the air shaft and at a distance of 600 ft. from it. The plan makes clear the general arrangement of the tracks leading from the mine to the shaft bottom. Two cross-sections taken on opposite sides of the hoisting shaft are shown in the upper portion of the figure. As there indicated, the roof above the loaded tracks is arched with brick, while the roof over the empty tracks on the opposite side of the shaft is supported by old steel rails and lagging.

A push motor is used for handling the cars after they are dumped and for switching them to the empty tracks, ready to be hauled into the mine. At the bottom of the figure is shown a profile of the shaft bottom. On this profile are indicated the grades of the main track leading to the rotary dump, which is shown on the plan as being located immediately opposite the hoisting shaft. Before reaching the rotary dump, the cars pass over the scale, by which they are weighed and their contents recorded in the scale room.

While the hoisting shaft is open to the return air current, very little of that air passes up this shaft, the main portion of the current being carried at once into the upcast compartment of the air shaft. At two mines in this state where such an installation has been made little dust is noticeable at the bottom of the shaft where the coal is dumped into skips and hoisted to the surface.



PLAN SHOWING ARRANGEMENT OF TRACKS, SCALE AND ROTARY DUMP AT SHAFT BOTTOM

At both of these mines the same general plan is employed, the hoisting shaft being an upcast.

Referring to the editorial comment replying briefly to this inquiry, permit me to say that the suggestion that the purpose of this plan is to avoid hoisting any more dead load than is necessary does not fully represent the case. As there stated, the empty car on the descending cage counterbalances the loaded card on the ascending cage, and the effect of the dead load is thus rendered *nil.*

The primary purpose of the rotary dump is to handle the contents of two or more cars with each hoist, which can be done when the contents of these cars are dumped into a skip large enough to hold them. As a result it is possible to greatly reduce the rope speed while, at the same time, increasing the capacity of the shaft for handling coal. These results it is not possible to accomplish when hoisting a single car at a time and using a self-dumping cage. Another consideration worthy of mention is that the great acceleration required in rapid hoisting gives load-peaks, which are very costly in an electrical installation.

Rotary Dump vs. Self-Dumping Cages

A word in reference to the cost of this installation, as compared with a self-dumping cage equipment, may be of interest. It is estimated that the cost of installing a skip outfit and rotary dump such as I have described is about two-thirds of the cost of installing self-dumping cages capable of handling the same tonnage, say an output of 6000 tons per day when hoisting from a depth of 600 ft. Also, in the use of the self-dumping cage, the weight of the coal hoisted is one-third of the gross weight of the cage, car and contents, while in skip hoisting the coal is only one-half of the weight of the skip and contents. It is thus apparent that there is a large saving of power in favor of the latter.

Before closing, I want to add a word in reference to the breakage of coal due to handling in these two systems. When self-dumping cages are used the coal is first dumped into the weigh hopper and from that it passes on to the screen. Hence, there is no reason why the breakage with the skip should be greater than when the coal is hoisted in cars by a self-dumping cage. On the other hand, observation proves that breakage is much reduced when large masses of coal are dumped at one time. Anyone who has watched this process and followed the coal from the time the car leaves the shaft bottom until the coal lands on the screen will agree with me in this statement.

Chicago, Ill. CARL SCHOLZ.

Treatment Accorded Miners

Letter No. 2—There never was a time in the history of the industrial world when the human element played such an important part in successful operation as it does at present. This is particularly true in respect to coal mining. The letter that appeared in *Coal Age*, Oct. 13, p. 646, by a superintendent in Colorado, is a timely one, expressing as it does the need for a closer study of the conditions existing in and about the coal mines of this country.

While I have been employed in and around coal mines for nearly 45 years, it has never been my pleasure or privilege to live in what might strictly be called a "mining camp." It may be my misfortune that I have always been located in or near a good-sized city or village. That is not to say, however, that I am unacquainted with conditions as they exist in the typical mining camps. "Human nature is the same the world over, regardless of creed or color," as the old saying puts it; and I believe this is true of men and women, whether living in a mining camp, village or crowded city.

The superintendent suggests, in the letter to which I have referred, that every serious-minded man who has charge of labor should strive to ascertain by a careful self-examination whether or not he is doing his full duty to his fellowmen and dealing justly with those in his charge. My belief is that this is one of the most important factors in the successful operation of a coal mine, or any other industry for that matter.

Make Newcomers Feel at Home

The letter continues by urging the importance of a mine official, while dealing justly, satisfying his men and keeping them contented. Particular reference is made to the treatment of newcomers, saying that they "should be made to feel at home at once." In his argument, here, the superintendent has struck the keynote to success in the handling of men, on whose work every operation vitally depends.

A man in charge of men must be able to convince them that he is honest and sincere in all his dealings. He must listen to their grievances, whether these are real or imaginary. If real, the trouble must be removed at once, as far as this is possible. If the difficulty is imaginary, time must be taken to convince the man that he is wrong, and this is not an impossible undertaking if the man believes in your honesty of purpose, or you have established a reputation for fair dealing.

Fair Treatment of Men Avoids Trouble

Fair treatment of men never fails, in my opinion, to touch a responsive chord, and this is the secret of the success of one operation, as compared with the failure of another working under the same conditions. There are numerous instances of local strikes occurring in mines adjoining other operations that never experience a day's trouble. It may be argued that this difference arises from the employment of a different class of men. While that may be so in some instances, I am inclined to think that the trouble, in most cases, is not the fault of the rank and file so much as it is of the men in charge of the work.

Too often, I regret to say, local trouble can be traced to a mine foreman or one of his assistants, who has failed to use a little gray matter, as the saying goes, in handling some trivial matter affecting one or more of the men in the mine. The time is past, I am glad to say, when a foreman or assistant foreman can reply to a man who comes to him with a complaint, by telling him to "Go to h——." In place of this attitude of a foreman toward his men has now come the spirit of, "Come, let us reason together."

As stated, the complaint of "lost cars" is a common one, but it is my experience, after 25 years of underground work and supervision, that the men and boys employed in the mines are as honest as those found in other industries, and I agree with "Superintendent"

when he says that "such claims must be carefully investigated."

In closing, let me say that I believe that the examples set by a superintendent and his bosses have a powerful influence for good or bad, and the moral lives of these men are reflected in the rank and file of the men about them. I can indorse the suggestion, "Don't make any promises that you cannot fulfill." Failure to keep a promise destroys confidence and costs the company dearly in the end.

I agree, also, with the statement that "the successful company is the company where every official, from superintendent down to driver boss, feels that upon him more than anyone else rests the responsibility of keeping the men satisfied and contented." This must have been in the mind of Charles Reade, when he wrote his famous book entitled, "Put Yourself in his Place." In our dealing with men, let us adopt as the principle of action the old adage, "Do unto others as you would have them do unto you." AJAX.

Wilkes-Barre, Penn.

Recovering Outcrop Coal by Stripping

Letter No. 1—Referring to the inquiry in regard to the feasibility of recovering the coal left along an outcrop of 5 miles, as described in *Coal Age*, Oct. 27, p. 737, I beg to offer the following as the result of my observations and experience in the examination recently of numerous stripping plants in Ohio and western Pennsylvania, including much territory available for stripping and the installation of necessary equipment.

Assuming that the 100-ft. strip of outcrop coal here referred to is solid formation and free from thick binders, so that it can be loaded as run-of-mine coal, and that the bed is not subject to sudden dips or pitches and there are no highways and county roads to impede the progress, making it possible to build a standard-gage railroad switch directly to the stripping pit, I would say that the scheme of recovering this coal is altogether a feasible one, employing for that purpose the stripping method known familiarly as "daylight mining."

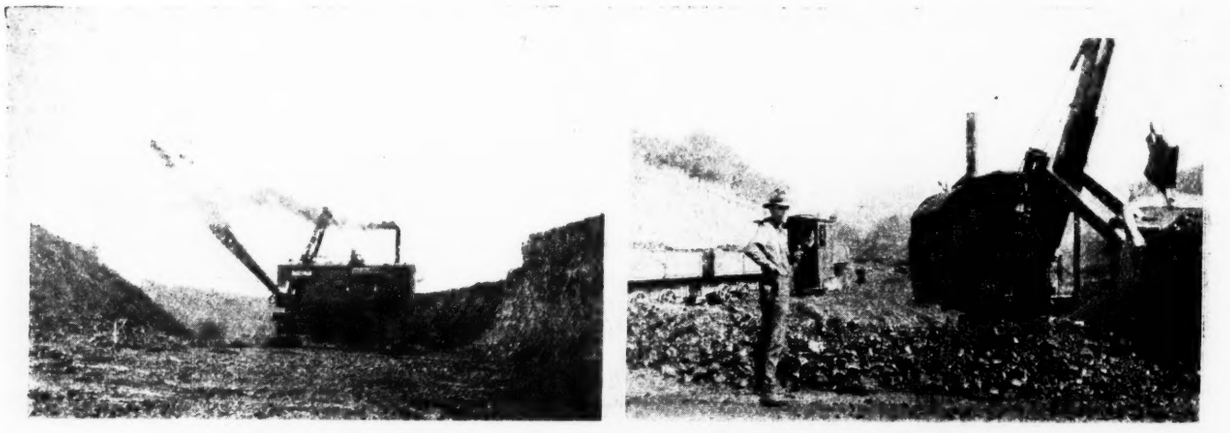
The coal in this strip, 5 miles long and 100 ft. in width, having an average thickness of 6 ft., covers an area of $(5 \times 5280 \times 100) \div 43{,}560 = 60.6$ acres. Taking the specific gravity of the coal (bituminous) as 1.3, the tonnage per inch-acre is $1.3 \times 100 = 130$ tons, allowing 10 per cent. for loss in mining and loading, which makes the total estimated weight of coal in this strip $60.6(6 \times 12 \times 130) = 567{,}216$ short tons.

For recovering this coal, I would suggest the installation of the following equipment: A Marion steam shovel, Model 300, which can be equipped with either an 80-ft. boom and 8-yd. dipper or a 90-ft. boom and 6-yd. dipper; or a Bucyrus steam shovel, Model 225-B, equipped with either an 80-ft. or an 85-ft. boom and a 6- or 7-yd. dipper. This large shovel would only be used to strip the overburden, and it would be better to equip it with the longer 85- or 90-ft. boom.

Details of Equipment and Work of Stripping

Working under favorable conditions, one of these shovels could remove, say 5000 cu.yd. of material in a day of 9 hours. It would be safer, however, to estimate its capacity at, say 4500 cu.yd. per day. At times it may be necessary to run the large shovel night and day, in order to keep ahead of the small loading shovel. For this reason, the large shovel should be equipped with a 1-kw., 30-volt, steam-turbine generator set. The electric lights and dynamos should be on the shovel before it leaves the shop.

For loading the coal, I would advise either a Marion No. 36 shovel, with crawling traction, or a corresponding Bucyrus No. 18-B, standard equipment, with a 1½-yd. dipper. Either of these shovels can load three 50-ton standard railroad gondolas in 1 hour, loading run-of-mine coal direct from pit into car, which I would advise, using 70-lb. rails laid to a standard gage. There will also be required two locomotives and a flat car, which complete the equipment.



ILLUSTRATING THE STRIPPING OF A COAL BED, SHOWING VERTICALITY OF CUT

When the pit has been opened and the work is in progress, the excavation will have a cross-section of practically 2100 sq.ft., the cut measuring 100 ft. on the bottom and, say 110 ft. at the top, with an average depth of 20 ft. down to the coal. Assuming the large shovel will handle 4500 cu.yd. of overburden in a day of 9 hours, the length of cut each day will be $(4500 \times 27) \div 2100 = 58$ feet.

On this basis the area of coal uncovered would be $58 \times 100 = 5800$ sq.ft., and the corresponding cubic capacity of a 6-ft. seam is $6 \times 5800 = 34{,}800$ cu.ft.

Assuming the coal weighs 80 lb. per cu.ft., the daily tonnage of coal available is 34,800 × 80 ÷ 2000 = say 1400 tons. Since the capacity of the small loading shovel is 3 × 50 × 9 = 1350 tons per day, the small shovel will generally be able to keep up with the larger shovel, allowing for some loss in loading.

Estimating the Cost of Stripping

Following is a brief summary of the expense of the operation:

Stripping Shovel—One shovel engineer, $7.50; one fireman, $3.50; one oiler, $3.50; one craneman, $5.50; four men in pit, at $3.50, $14; one coaler, $3; total, $37.

Coal Shovel—One shovel engineer, $7.50; one fireman, $3.50; two men at dipper, at $3.50, $7; one man cleaning up spillage, $3.50; one driller, $3.50; five coal cleaners, at $3.50, $17.50; total, $42.50.

Haulage—Two locomotive engineers, at $7, $14; two tripriders, at $3.50, $7; total, $21.

Trackmen—One foreman, $4; six trackmen, at $3.50, $21; one superintendent, $8; one blacksmith, $5; one helper, $3.50; one timekeeper, $4; one night watchman, $4; total, $49.50.

The total pay-roll for 36 men is, therefore, $150. The daily cost for supplies and material may be estimated as follows:

Supplies—Coal for boilers, 10 tons at $2 a ton, $20; oil, waste and packing, $4; repairs and upkeep, $18; depreciation of equipment, $24; incidentals, $10; total, $76.

The total operating costs per day, according to this estimate, would therefore be $226; or, allowing a suitable margin for insurance, taxes and expense of administration, it would be safe to estimate on a daily cost of, say $250.

My observation leads me to state that the approximate cost of such an installation, including rails and other track material, would be about $150,000. Taking the daily output as, say 1400 tons of coal, and the expense of operation, $250 per day, would make the cost of coal f.o.b. cars practically 18c. per ton, which should be an attractive proposition at any time.

Before starting such an undertaking, however, careful consideration should be given to the continuity of the coal, the hardness of the stratum forming the floor of the seam, and questions of transportation and marketing of the product, water supply, labor conditions, etc.

If any pillar coal is to be recovered, this will form a separate proposition. The success of stripping operations will depend very largely on the shovel engineer and the superintendent. The best men possible should be procured for these positions.

H. B. Miller,
Pittsburgh, Penn. Mining Engineer.

Qualified Mine Foremen

Letter No. 12—From the discussion of this question in *Coal Age*, it is clear that not every man who holds a certificate of competency is a fully qualified foreman. In reading the different letters that have been received, one is impressed with the idea that the general opinion of a qualified mine foreman is a man who has come through the mill, and his experience in performing the different kinds of work required in the mines has taught him that the best results are obtained in practice when a man has a knowledge of the theory of mining as well as experience in performing the work.

My opinion is that a qualified foreman must be a good judge of men's work, so that he will know when he is getting the most out of his men. He can only judge of this correctly when he has done the work himself. If the foreman has never laid a piece of track himself, or never put down a switch, there are many things connected with the work that he cannot judge wisely. He is not able to tell whether the material is being used to the best advantage or the work performed in the most economical manner.

To my mind, the qualified foreman is a man who has risen from trapper boy to his present position, and has, from time to time, performed practically every kind of work required in the mine. In this way only can a man become fitted for the most important position underground.

A foreman who is thoroughly competent and efficient in his work will be found to devote much of his time to the study of mining principles and to the reading of mining books and papers. By this means he becomes acquainted with many improved methods of mining and keeps himself posted on the most up-to-date equipment. Reading and study make him realize that there are many problems that arise in mining practice that cannot be solved satisfactorily without the knowledge that is to be obtained from books. Without that knowledge it is possible for a foreman to spend many dollars in useless work, which would be saved if the foreman knew how to apply the rules and principles taught in the textbooks.

One frequently hears a miner remark that he "would much rather work for a man who was a good, old practical miner than for any other kind of a foreman." For my part, I would prefer to work under a foreman who is an experienced miner and who has, besides, a knowledge of the theory and principles of mining. Such a man will be able to keep his men safe and handle almost any situation that may arise in the mine.

Herrin, Ill. Ostel Bullock.

Letter No. 13—The Discussion department of *Coal Age* is proving very entertaining, but at times statements are made that are amusing to veteran mine foremen and others who have been in the harness for 15 and 20 years or more.

In speaking of the necessary qualifications of mine foremen, some contributors seem to think that if a man can use a compass, run a motor, or operate a coal cutter, and uses nothing in his vocabulary stronger than fresh country butter, he is an example of the much-sought-after-but-seldom-found-underground qualified foreman. Has anyone seen him?

It was my good fortune to see and become well acquainted with such a paragon and, if permitted, I will describe what the man looked like and what he did. The best way to find such a foreman is to ask the inspector. In that way I discovered my man.

No, his name wasn't "Brown," but his trousers were, or rather had been. He was about 5 ft. 6 in. tall, more or less, and was the proud possessor of a first-class mine foreman's certificate.

Yes, he was a first-class man all around, and most everything that he did was first-class. He was the first man on the job in the morning, bright, alert, keenly observant and active.

"An angel?" Oh, no—a man, full of vitality and everywhere at once. One glance of his keen eye would com-

mand the respectful attention of every man on the plant. "Gets hot under the collar sometimes when things are not moving just right?" Yes; but a hustler to get them running smoothly again.

This foreman was a first-class general. When the whistle blew at starting time, every man moved to his post and did his bit. Things ran like clockwork, until the time came around to quit—no confusion, no waiting for orders, every man knew just what to do and did it, you bet. There was not a laggard on the job, from the superintendent down to the smallest trapper boy.

RESULTS WHEN A MAN IS QUALIFIED FOR HIS JOB

You ask, "What were the results?" I answer: The mine was known throughout the district as "first-class." Every employee was first-class; they were trained to be first-class. The equipment, engines, boilers, cars, tracks and machinery—all were first-class. Well, say—that foreman worked like a trooper to keep them that way and, what is more, every man on the job did the same. It seemed to be natural—it was "in the air," as we say.

Speaking of air, the ventilation in that mine was A-1. There was never any complaint of "bad air." Travelingways were in good condition. No rubber boots were needed, as every road and manway was well drained. Cross-headings and main headings alike were driven true to the line, with plenty of clearance at the side of the track. It was a clean, safe mine throughout, and the output and cost-sheet were things of which any foreman might well be proud.

Best of all, however, was the low accident rate. A few inquiries revealed the fact that this foreman had been in charge of very gaseous mines for a period of 20 years, during which time there occurred two fatal accidents and four minor ones. But, the last analysis was the record found in the mine inspector's report, where the ventilation, drainage and general conditions of the mine were pronounced "first-class in every respect." Yes, he was a *qualified mine foreman* and, in addition, a first-class general. A MINE MAN.

Confluence, Penn.

Unit vs. Departmental Control

Letter No. 6—From an experience of a number of years, in both large and small operations, it is my opinion that when an individual proposition is of sufficient size to warrant the employment of skilled men capable of taking charge of the different departments —for example, chief electricians, master mechanics, boss carpenters, boss drivers, etc.—there is a great advantage in having one general superintendent or mine manager who has supreme control over all the departments.

It goes without saying, however, that such a general superintendent or manager must have a personal knowledge of the different branches of mining work, if he expects to control the work in each department by his own personal supervision. There are few managers, in my opinion, that have the knowledge required to direct the work in these different departments and make the mine a paying proposition. For this reason, it is far better, I believe, to employ capable men to take charge of the different kinds of work and give each man full control in his own department.

In this respect, I fully agree with the ideas expressed by W. R. Jones, in his letter, *Coal Age*, Oct. 20, p. 690. As he has stated, a capable manager can do much to standardize the work in each department of the mine. If the manager is capable, he can direct the work and instruct the different department heads in a manner that will afford all the advantages of unit control and avoid the friction that would arise were each department to be operated independently of the others.

At the present time, I have in mind a large mining corporation operating 42 separate mines of different capacities. One manager has full control over all the different departments in these mines. Men of high ability and wide experience are in charge of each separate department. For example, there is a chief mining engineer, mechanical engineer, electrical engineer, division mine superintendent, purchasing agent, chief accountant, real-estate agent, etc.

The results show that each department proves the ability of the man in charge. The chief mining engineer insures the uniformity of all mining operations. Likewise, the chief mechanical engineer and chief electrical engineer insure the standardizing of all mechanical and electrical equipment. It is easy to see that the purchasing agent, working under these conditions, is able to effect greater economy in the purchase of all supplies and equipment.

I cite this instance as being a good example of unit control, where the work of well equipped departments is directed in an efficient manner by a capable man who is the recognized head of his department and each department is responsible to a single general manager. On the other hand, the manager of a smaller operation would have to possess both a business education and engineering knowledge to make the mine a paying proposition. MINING ENGINEER.

Spangler, Penn.

Notice to Subscribers

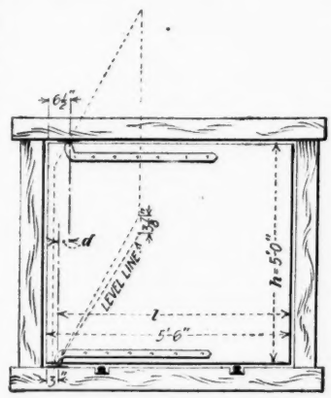
Several complaints have recently been received from subscribers who state that they have not been getting their copies of *Coal Age* until long after the usual time. In some instances, it is said that copies were received a week or ten days after the date of publication, where formerly the paper had arrived but a day or two after its issue from the press.

Investigation in the New York Post Office has revealed the fact that mail matter of this class, such as weekly and monthly publications, has frequently been held up, owing to the shortage of help in the Post Office Department. This shortage is due to the large number of post-office employees who have been drafted into the service of the Government and have gone into the training camps or been sent to the front. At times the situation has been acute, but everything possible is being done to avoid unnecessary delay. This announcement will explain what many subscribers have thought might be the fault of the publishers. *Coal Age* is always ready for distribution and mailing the day before its date of publication. We must all be patient and accept the delay as one of the burdens of the present war and by so doing show our patriotism.

Inquiries of General Interest

Hanging a Mine Door

As all coal-mining men know, a mine door should be hung in such a manner that it will not stand open, unless it is propped or held back against the rib. The method sometimes used to cause a door to close automatically, by suspending a weight attached to a cord, wire or chain, is not one to be recommended as reliable at all times. A more practical method, and one generally adopted in coal mines is to place the upper hinge or bolt on which the door swings a few inches to one side of the vertical line through the lower bolt. This gives the door a certain fall when it is set open and inclines it to close automatically.



SKETCH OF A MINE DOOR

I have illustrated this method by the accompanying sketch, which shows the upper bolt set forward a distance of 3½ in. beyond the vertical line through the lower bolt. This door is 5 ft. high and 5 ft. 6 in. long. The question I want to ask is, How high will the outer lower corner of the door be raised when it is standing open, at right angles to the door frame? As shown in the figure, the lower bolt is 3 in. from the inner edge of the door, while the upper bolt is 6½ in. from that edge. Kindly give the formula for calculating this rise or fall of the door.

Eldorado, Ill. W. A. TURNER.

The desired rise or fall of the door is calculated, with close approximation, by a simple proportion. Thus, calling the distance the upper bolt is set forward from the vertical line through the lower bolt d, the vertical height of the door h, the distance from the lower bolt to the outer edge of the door l, and the required rise or fall x, we have,

$$h : d : : l : x$$

From the dimensions shown in the figure, $h = 5 \times 12 = 60$ in.; $d = 6.5 - 3 = 3.5$ in. The length of the door being 5 ft. 6 in. or 66 in., $l = 66 - 3 = 63$ in. Substituting these values in the above proportion, we have

$$60 : 3.5 : : 63 : x$$

$$x = \frac{3.5 \times 63}{60} = 3\tfrac{3}{5}\ in.$$

Owing, however, to the oblique position of the door when standing open, the actual rise will be slightly less than this amount, but the difference is almost inappreciable. Allowance must be made so as to give the door sufficient clearance at the roof when standing open.

Sometimes, instead of setting the upper hingebolt of the door forward, as just described, the expedient is adopted of ranging both the upper and lower bolts in the same vertical line on the door, and then tilting the door frame in such a manner as to give the door the desired fall when open. In that case, however, the effect is *nil* when the door stands at right angles to the door frame. Also, if the door is pushed open beyond the right angle it will fall back against the rib instead of closing automatically. Tilting the door frame, in the manner suggested makes the door that much harder to push open.

Power To Drive Shaking Screens

I am much interested, at present, in ascertaining the power required to drive a shaking screen; and, looking over the back files of *Coal Age*, I find this subject treated in an excellent article by W. H. McGann, Vol. 9, p. 368.

For estimating the horsepower required for driving a hanger-supported screen, Mr. McGann gives the following formula:

$$H = 0.00000000112\ W\ R^3\ S^2$$

in which W equals weight, in pounds, of screen and material; R equals speed of driving shaft, in revolutions per minute; S equals length of stroke, in feet.

Substituting, in this formula, the following values: W equals 2000 lb.; R equals 150 r.p.m., and S equals ½ ft., gives for the horsepower required to operate this screen,

$$H = 0.00000000112 \times 2000 \times 150^3 \times 0.5^2 = 1.89\ hp.$$

On page 609 of the same volume, I find the following formula for finding the horsepower required, which is given in reply to an inquiry on shaker screens:

$$H = \frac{Wn^3l^2}{28{,}000}$$

in which W equals weight, in pounds, of screen and material; n equals speed of drive shaft, in hundreds of revolutions per minute (see correction, page 687); l equals length of stroke, in inches.

Substituting the same values in this formula, making $n = 1.5$, and $l = 6$ in., we obtain for the required horsepower,

$$H = \frac{2000 \times 1.5^3 \times 6^2}{28{,}000} = 8.6\ hp.$$

This latter formula is given by Raymond B. Lawry, Chicago, Ill., an engineer of experience in shaker-screen work. Kindly advise which of these two formulas is the most reliable.

Jeddo, Penn. J. J. KIENBERGER.

The McGann formula referred to by this correspondent relates to hanger-supported screens, while it is probable that the formula of Mr. Lawry refers to another type of support where the screen is mounted on rollers. Let us hear if any one has tested these formulas.

Examination Questions

Mine Officials' Examination, in Colorado, 1917

(*Selected Questions*)

Ques.—What is the object to be attained by requiring a mine foreman to visit the working places every day, while the men are at work?

Ans.—By so doing, the foreman is kept in close touch with the work being done in every portion of the mine. If any men are working under unsafe conditions, his daily visit to their working places makes it possible to avoid an accident. He is able to observe the manner in which each man performs his work and the material he has on hand in his place, and to give him any needed instructions in regard to the timbering of his place and the mining and shooting of his coal. The foreman thus becomes better acquainted with each of his men and, if he has the right disposition toward them, better relations are established and better work performed.

Ques.—What is the difference between light carbureted hydrogen and firedamp?

Ans.—Light carbureted hydrogen is another name for methane or marsh gas (CH_4); while "firedamp" is a mixture of this and possibly other gases with air, in such proportions that the mixture is either inflammable or explosive. It is this character that gives the mixture the name of firedamp.

Ques.—How many cubic feet of marsh gas will be required to be generated in a mine, per minute, to render dangerous a current of 30,000 cu.ft. of air per minute?

Ans.—The percentage of marsh gas that will render mine air dangerous depends very largely on the conditions existing in the mine with respect to the inflammability of the coal and the manner in which it is mined. The mining of soft bituminous coal with machines will generally produce large quantities of fine dust that is carried in suspension by the air current. The presence of this dust will often make 1 per cent. of gas dangerous. Under these conditions, the 30,000 cu.ft. of pure air will be 99 per cent. of the mixture containing 1 per cent. of gas, which makes the total volume of air and gas $30{,}000 \div 0.99 = 30{,}303$ cu.ft. per min. The quantity of gas to be added is, therefore, 303 cu.ft. per min., under the assumed conditions.

In the mining of harder bituminous coal or anthracite, 2 per cent. of gas in the air current may be considered as dangerous. In that case the total volume of air and gas would be $30{,}000 \div 0.98 = 30{,}612$ cu.ft. per min., and the quantity of gas to be added to produce this condition in the mine is, therefore, 612 cu.ft. per minute.

Ques.—A rectangular airway is 8 ft. high, 12 ft. wide and 2700 ft. long; what is the rubbing surface, in square feet?

Ans.—The perimeter of this airway is $2(8 + 12) = 40$ ft. The rubbing surface is found by multiplying this perimeter by the length of the airway, which gives for the rubbing surface, $s = 40 \times 2700 = 108{,}000$ sq.ft.

Ques.—How many cubic feet of air is passing per minute along an airway 6 ft. high and 8 ft. wide when the velocity of the air current is 500 ft. per minute?

Ans.—The sectional area of this airway is $6 \times 8 = 48$ sq.ft. The quantity of air in circulation is found by multiplying this sectional area by the velocity of the air current in feet per minute, which gives for the quantity of air passing, $q = 48 \times 500 = 24{,}000$ cu.ft. per minute.

Ques.—An airway is 7 ft. high and 8 ft. wide, and the rubbing surface, per square foot of section, is 2684 sq.ft. What is the length of the airway?

Ans.—The sectional area of this airway is $7 \times 8 = 56$ sq.ft.; and the total rubbing surface is, therefore, $56 \times 2684 = 150{,}304$ sq.ft. The perimeter of the airway is $2(7 + 8) = 30$ ft. In this case the length of the airway is found by dividing the total rubbing surface by the perimeter, which gives $150{,}304 \div 30 = 5010+$ ft.

Ques.—Why is the ventilation of a mine necessary? Describe fully.

Ans.—Mine air is being constantly contaminated with the gases that issue from the strata and those generated by the breathing of men and animals and the various forms of combustion taking place, such as the burning of lamps, the slow combustion of fine coal and slack in the waste. The result is that the oxygen of the air is depleted and carbon dioxide (CO_2) and other gases are formed, which must be removed by the air current and fresh air supplied to take their place. For this reason, it is necessary that every portion of the mine should be thoroughly ventilated by an ample current of fresh air, which should be so conducted as to sweep away the gases that would otherwise accumulate.

Ques.—State why, in your opinion, the pressure or water gage increases in a mine, as the workings are extended, other conditions remaining the same.

Ans.—The extension of the workings is generally attended by an increase of the rubbing surface in the mine, which means an increase of the mine resistance due to the rubbing of the air current over the surface of the airways and meeting with numerous obstructions in the air-course. The increased resistance of the mine causes a like increase of the ventilating pressure required to overcome it and produce a circulation of air throughout the workings.

Therefore, the greater the rubbing surface the greater the mine resistance and the greater the pressure that will be required to produce the same volume of air in circulation. The water gage is the measure, in inches of water column, of the unit of ventilating pressure and must therefore increase as the pressure required for the circulation increases.

Coal and Coke News

For the Busy Reader

Dr. Garfield has issued priority orders for the Lehigh Valley and Chesapeake & Ohio roads, which authorizes them to commandeer coal for their own use from mines along their lines.

* * *

It only takes from eight to ten hours for Uncle Sam to place 2000 tons of coal aboard a man-of-war. In many instances this amount of fuel can be placed aboard ship in from four to five hours.

* * *

Operators in the Thacker field of West Virginia have made an exhibit to the national Fuel Administrator, showing the injustice worked against them by the fixing of the 40c. differential across Tug River in Kentucky.

* * *

Shipbuilding plants, munitions factories, steel concerns and other plants at work on war contracts are to be supplied with rush orders of coal to bring them up to highest efficiency. To meet their needs priority orders will be suspended.

* * *

To work out an automatic penalty clause which will be satisfactory to the Fuel Administration, a meeting will be held Nov. 26 in Washington, at which representatives of the Illinois Coal fields will confer with representatives of the Fuel Administration.

* * *

Munitions plants are using 50 per cent. more coal this year than last year, the Bethlehem Steel plants alone consuming 3,000,000 tons more than in 1916. Demands for coal for the army and navy have jumped this year from 2,000,000 to 8,000,000 tons.

* * *

Further sales of coal "subject to revision" are prohibited in an order issued Nov. 16 by Doctor Garfield. This change of procedure was made necessary from the fact that the retailers have found it impracticable to collect any differences from the consumer.

* * *

In the six months, May to October, inclusive, there were moved 150,000 more carloads on anthracite than in the same months of 1916, an increase of 18 per cent., and 751,000 more carloads of bituminous and lignite coal than in the same six months of 1916, also an increase of 18 per cent.

* * *

The fuel administration is considering an advance in anthracite prices with a view to averting any suspension in work. Mine operators asked that the price be advanced to meet increase in wages conceded on condition that the fuel administrator grant request for a higher coal price sufficient to absorb wage advance.

* * *

United States attorneys in all districts of the country are being furnished copies of all orders and rulings issued by the United States Fuel Administration, and are being instructed by United States Attorney General Gregory to take all steps for prosecution of violators of the Lever Act or price rulings as fixed by the President and the Fuel Administration.

* * *

Lack of coal cars continues very seriously to retard work in many mines in Pennsylvania, Illinois, Ohio and other states, according to reports made by a group of Middle Western mine owners, who are trying to unravel transportation difficulties. Many mines are running on slow schedule because it is impossible to get sufficient cars.

* * *

Coal dealers, from the operator to the retailer, are prohibited from selling coal at prices subject to revision by an order issued recently by Fuel Administrator Garfield. Heretofore producers have been permitted to sell their coal at prices fixed by the Government with a stipulation that the price might be revised if the Government fixed prices were changed.

The Coal and Ore Committee of the Council of National Defense has issued a report for the week of Nov. 7, showing that 822,613 tons of coal had been delivered at the Lake docks and bringing the total deliveries for the season for Northwest markets to 24,170,000 tons. The minimum required, however, for the season, which has but a few weeks to go, is 29,000,000 tons, so that if the requirements are to be met, the next succeeding four weeks would demand the shipments of 4,829,000 tons.

Harrisburg, Penn.

Over 2000 general superintendents and superintendents of mines in Pennsylvania have received letters from State Chief of Mines James E. Roderick, giving notice that the forms to be used for licenses in connection with handling explosives in coal mines will not be available at the time required. The Chief of Mines has notified the superintendents that all mine foremen must keep an itemized record of explosives, beginning with Nov. 15, as provided by an act of Congress.

According to Sect. 9 of the act, the operators will be held solely responsible for the powder they issue to German, Austrian, Hungarian, Bulgarian and Turk coal miners and metal miners. Should any of the powder or other explosives be used by the miners to destroy munitions plants and other property in the United States, the mine operators who placed the explosives in their hands will be called to account.

This is the decision reported as the result of a series of conferences held between the mine operators of the United States and Van H. Manning, director of the Bureau of Mines. In other words, the United States Government is not going to assume responsibility for the issuance of explosives to any alien whose government is unfriendly to the United States.

The effect of this decision will be either a reversal of the present policy of operating mines in this state or the wholesale discharge of all Germans, Austro-Hungarians, Bulgarians and Turks now employed in the mines. Under the system of operation in this state, the miners buy their powder at the company store or supply house. If this policy is to be continued, each miner would have to be licensed individually, for under the new explosives act no explosives can be sold to any person not licensed. It has been suggested to the operators in this state that they discard their policy of selling powder to the miners from the store and supply house, and adopt a plan of selling the powder on the ground.

* * *

German agents were accused of trying to curtail the production of bituminous coal, and the conscription of labor in the mining industry was urged, at a symposium on the coal situation at the Contemporary Club at Philadelphia, on Nov. 12.

H. Pemberton Hutchinson, president of the Westmoreland Coal Co., speaking on the soft-coal situation, said that agents in the bituminous regions have tried to reduce production by threatening foreign-born miners with persecution of their relatives abroad if they showed too much energy in getting out the fuel. Most of the men threatened, Mr. Hutchinson said, were Austro-Hungarians, who were loyal to their adopted country.

The sentiment of the men is not with the propagandists, Mr. Hutchinson declared, and once the agents were discovered and driven from the premises not a whisper of complaint was heard. He also stated that the men were frightened by the threats.

Mr. Hutchinson said that the shortage of bituminous coal is due to the lack of efficient labor, among other things. The only remedy, he added, is for the Government to conscript labor from non-essential industries.

Samuel D. Warriner, president of the Lehigh Coal and Navigation Co., said that labor must stay in the mines to get out the coal and that "if added wages will produce results we are willing to try it. But we can no longer stand the competition from men from other lines of industry," Mr. Warriner added. "Wages have risen not because of added costs of living, but because of the drain by the Government and by munition plants."

* * *

Government officials, members of the committee of public safety and coal operators are in consultation as to practical methods of reducing or altogether eliminating the saloon evil in the coal regions of the state. Operators report that after each semi-monthly pay many of their employees either are inefficient for several days or do not report for work at all.

All agreed that a remedy must be applied, and the legal end of the matter is now being looked up. In some counties it is proposed that the selling of beer and whiskey be confined to certain legitimate hotels at certain hours of the day and evening. This can be done by refusing to renew the United States license on saloons, which would give the Government power to close them up. This plan would give breweries some business and would not necessitate their closing down or bring ruin to the plants.

Railroads will not employ men who enter saloons. Coal mining is more dangerous than railroading, but the operators cannot take the same stand on the liquor question as have the railroads. Saloons are sprinkled all over the coal region and are patronized heavily by the foreign element.

Operators cannot prevent miners from patronizing saloons, but the Government may remove the temptation and thus aid in vastly increasing the output of coal to win the war.

In this state, and especially in the coal regions, there are so many saloons established with the sanction of the courts that the proprietors are obliged to solicit trade, and miners who would let booze alone if not molested are thus tempted to dissipation.

* * *

The coal problem in the bituminous region appears to become more and more a question of getting coal out of the mine and then securing railroad distribution. Operators contend that the shortage in men is directly due to the insufficient car supply, which results in so much lost time that men leave the mines and coke ovens.

* * *

The shipments of anthracite for the month of October, 1917, as reported to the Anthracite Bureau of Information, amounted to 7,110,950 tons, establishing a new record for monthly shipments and exceeding the shipments of June, 1917, which, until now, had been the greatest of any month in the history of the industry, by 61,913 tons. October shipments show an increase of 738,194 tons, or 11 per cent. over the preceding month, and are 1,240,746 tons, or 21 per cent., in excess of the shipments during the corresponding month last year. Total shipments for the first ten months of 1917 have amounted to 64,889,047 tons, an increase over the same period in 1916 of 9,088,427 tons.

* * *

Officials of the hard-coal companies are reported to be preparing for another drive to have their employees exempted from the operation of the draft law on industrial grounds. When the operation of the draft was first started, the companies were allowed to pick men to the extent of 10 per cent. of those called. This in many cases was a negligible quantity. New impetus has been given the effort, however, by the revision of rules for exemption and classification of the industrial men and their material relations. The disclosures of an immense coal shortage facing the nation is also another factor in the situation in this field, it being pointed out that the anthracite men, with a much reduced working force, have surpassed all production records.

PENNSYLVANIA

Anthracite

Pottsville—In addition to supplying the country with an increased output of coal, this region has now begun to furnish the Government with wood. Large quantities of kindling are being collected on the mountains, which will likely be used at the soldiers' cantonments, and logs suitable for use in furnaces and on boats are also being

sent forward. Although stripped bare of mining timber, the forests hereabouts contain large amounts of kindling wood. Forty-five cars have already gone forward.

Jeddo—Sixteen Italians employed at the Jeddo colliery of the G. B. Markle Co. left for New York recently, whence they will sail for Italy to fight in defense of their native land. Thousands of Italians in the anthracite field are arranging to return to Italy as soon as possible.

Parsons—The employees of the Wilkes-Barre Colliery Co. recently contributed to a tobacco fund for soldiers in France and have received a post card from "Somewhere in France" acknowledging the gift. The card was written in French and signed Heri Segun. The miners are preparing to start another fund.

Shamokin—The Susquehanna Collieries Co., which recently assumed control of the Pennsylvania Railroad Co.'s anthracite collieries, announced on Nov. 15 that hereafter the operations would be placed on full-time schedule. Since the new company took possession of the mines it has been handicapped by inability to procure a sufficient number of cars to ship coal, collieries frequently being operated only three days a week. Under a new arrangement just completed, the company is assured by the Pennsylvania Railroad Co. and the United States Government that there will be a supply of cars to meet the demands.

Scranton—Carrying carbide to be used in filling miners' lamps caused a serious explosion in the No. 1 shaft of the Jermyn Coal Co. at Old Forge. The carbide was being carried in a paper bag and gas generated therein was ignited by a naked light with the result that six men were badly burned, probably fatally. The report spread that a heavy loss of life had ensued and a mob besieged the shafthouse until their fears had been quieted by the officials.

Hazleton—It is estimated that only 5 per cent. of the coal in the Wolfe colliery remains to be mined and that the colliery will be abandoned within the next year. The strippings of John J. Coyle, at Laurel Hill and No. 6, which were closed down several weeks ago because the coal companies declined to allow increased yardage rates to meet advancing cost of production and labor, will probably remain idle the entire fall and winter. The machinery is being dismantled.

Wilkes-Barre—Supply men have reported to the Committee of Public Safety that agents of some interests identifying themselves with the silver and copper mines of Idaho are here trying to buy up the entire supply of calcium carbide. This chemical is used in mining lamps and in some mines is employed entirely to furnish light. Supply houses have been called upon by young men of foreign accent who wanted to buy up every pound for consignment to Idaho. They said they had obtained 150 tons in Scranton and about 100 tons here. It is believed their aim was to cripple the coal mines.

Drifton—Owing to the scarcity of motive power on account of unusual war-time demands, the Lehigh Valley Railroad company, on Nov. 15, began to put in service old engines which had been virtually discarded. They have been repaired and repainted and will be employed in hauling coal from the anthracite field to Tidewater points.

Bituminous

Connellsville—If the extension of the embargo laid by the Pennsylvania R.R., which has been effective against box car freight for some time, to include all freight and all classes of equipment from all connecting lines, which was made effective recently, remains in force for any considerable time, shipments of coke from the Connellsville region are certain to be very much more seriously curtailed and all plants having exclusive connections with the Monongahela River R.R. will be obliged to suspend operations.

Roscoe—Two men were killed and five others seriously injured, one probably fatally, when 20 loaded cars broke away from a "dilley" at the top of a steep grade in the main entry of the Eclipse mine of the Pittsburgh Coal Co. recently and crashed into a car in which seven men were riding. Those killed were Frank Briggs, miner, and John Kirch, fireboss. Charles Lang, fireboss, internally injured, will die. The injured are John Roberts, Allison Tay, George Rutherford and N. Wick, all firebosses.

Connellsville—An analysis of the new wage scale recently made effective by the H. C. Frick Coke Co. shows that some of the employees received increases of 22½ per cent. The new rate makes it possible for the average miner to earn from $80 to $90 every two weeks and first-class miners—men who can mine and load about 500 bushels a day—upward of $150 in two weeks. An average workman can mine and load 300 bushels daily.

Oil City—Long-abandoned coal mines in the southern part of Venango County have resumed operations and are turning out a small amount of coal each day. The resumption of operations is due to the scarcity of coal in this section.

Uniontown—D. M. Hertzog and George R. Scrugham, trustees for J. V. Thompson, are preparing a petition asking for the confirmation of the sale of Greene County coal to J. G. Butler, of Youngstown, Ohio. The petition will mean the ratification of what is known as "the Frick sale," by which approximately 12,000 acres of Greene County will be disposed of for $6,000,000. In addition to the estate of Mr. Thompson, the finances of Judge Work and other coal owners in this section will be greatly benefited.

WEST VIRGINIA

Clarksburg—The Pitcairn Coal Co. recently sold 475 acres of coal along the West Fork River, near here, to the Fairmont Big Vein Coal Co. for a consideration of $237,882, or $500 an acre.

Elkins—The West Virginia Coal and Coke Co. has completed plans for the building of 200 houses at the plants at Mabie, Norton and Bower. These residences will be of the modern bungalow type with running water as well as electricity.

Bluefield—Fire thought to have been of incendiary origin completely destroyed the No. 1 tipple of the Lake Superior Coal Co., at Superior recently, entailing a loss estimated at $100,000. This is the second tipple to be destroyed by fire in southern West Virginia, within the last month, the other being the tipple of the Burnwell Coal and Coke Co. at Sprigg.

Eight coal companies in this district have filed complaints with the West Virginia public service commission against the application of the Appalachian Power Co. for permission to increase its charge for electric power used by many of the mines in the field. The company proposes a 20 per cent. increase.

Fairmont — The Consolidation Coal Co. has issued another circular to its men in which it reminds the mine workers of the responsibility which rests upon them. The company entreats the men to get out every ton of coal possible—to exert themselves to the utmost.

J. Walter Barnes, fuel administrator of West Virginia, will have his office in Fairmont and will be assisted in handling the fuel needs of West Virginia by an advisory board.

The coal operators of the Buckhannon-Philippi district, in which there are a number of wagon mines, met at Buckhannon recently and discussed an organization to be perfected at a meeting which will be held at Philippi on Dec. 2. J. T. Shinn was elected temporary chairman and H. B. Kramer was made temporary secretary. T. L. Lewis, secretary of the Splint and Gas Coal Association, of Charleston, was present at the meeting and made a strong talk on the value of organization.

Two men, both mine experts, met death recently while exploring the interior of Jamison Mine No. 7, at Barrackville, in search of the bodies of three miners who were killed in the explosion there on Oct. 19, 1916. The men had gone into a section of the mine that had never been entered since the catastrophe, more than a year ago, when 11 men were killed.

Charleston — The Guyan Mining Co. is bridging Guyandotte River opposite Earling in Logan County and expects to be able to ship coal before the end of the year. The bridge was necessary to reach the tracks of the Guyan division of the Chesapeake & Ohio R.R. A. C. McConnaughey is the general manager of the mine.

What is thought to be a coal loading record for one day was reported at Charleston recently by officials of the Main Island Creek Coal Co., when the daily records showed that 8430 tons of coal had been loaded into every available car during one 9-hour day. This coal was loaded from five mine openings at Omar.

Reedsville — The Troyford Coal Co. is building a steel tipple at its operation at Reedsville, on the Western Maryland R.R., the capacity to be 1000 tons daily.

Amherstdale — Production of Proctor, Proctor-Eagle and Madne companies on Buffalo Creek in Logan County for the past month was 4000 tons in excess of any previous month on the same car allotment. The mines are operating in the vicinity of Amherstdale.

Morgantown—This vicinity is the scene of quite some mining activity. There are fourteen collieries with tipples showing on Scott's Run, within two miles of Morgantown. The electric line planned to Wheeling now runs to near Blacksville and carries steam cars out that way for coal. There are six or eight new tipples along the Monongahela.

Williamson—The Portsmouth-Solvay Co. has finished the construction work at its Belfry mines and is now loading coal at the rate of 10,000 tons per month. It is reported that the company will open additional mines just east of the Leckleville yards, about 1½ miles from Williamson, which will give employment to several hundred men.

Huntington — The main Island Creek mines in Logan County, of which ex-Governor Hatfield is one of the principal stockholders, turned out 93,000 tons of coal during the month of October.

KENTUCKY

Madisonville—Fire, alleged to have been of incendiary origin, destroyed a stable of the Nebo Consolidated Coal and Coke Co. here, together with eight mules which were stabled there. A loss of $1500 is reported.

Lexington—An examination of applicants for mine foremen and fireboss certificates will be held at the office of the Chief Mine Inspector here on Monday, Nov. 26.

Barbourville—Local coal operators and coal-land owners are promoting a new railroad, to extend from Manchester through the Hoss Creek district for a distance of five miles, as a branch of the Cumberland & Manchester R.R. This line would open up some of the largest coal seams in Clay County.

OHIO

Steubenville — The Ramsey and Robeyville mines of the Great Lakes Mining Co. have been placed under an unusually heavy night guard, to avoid the property being destroyed. Already several thousand dollars' worth of damage has been done, and it is thought that the burning of the fanhouse and the blaze in the powder magazines which took place recently are deliberate attempts to put the mines out of business.

An I. W. W. outbreak at mines in the southern part of Jefferson County, with threats at the destruction of property at the mines, caused the operators to place armed guards around the workings. State officials are conducting an investigation of the trouble.

East Liverpool — The American Sewer Pipe plant was forced to suspend operations recently owing to a shortage of fuel. The plant is turning out a large amount of pipe for the Government, for use in cantonments and camps, and the enforced idleness will hold up production.

Bellaire—The Bellaire Coal Co., which operated the Long mine at Pinch Run, recently sold its holdings to Charles W. Wise and Thomas Long. The latter will be manager of the new company and the former will be secretary-treasurer. G. A. Stephens and Pat Gilgoohly were the former owners of the mine.

Findlay—The lack of coal is telling in the oil fields, where a number of men have been laid off.

Canton—Many Canton persons are hoarding coal, according to reports reaching members of the Stark County coal commission. It is thought that where a dealer is found delivering excessive amounts of fuel to consumers it will be reported and shipments stopped at the mine. The supply will be diverted to other dealers

INDIANA

Greenfield—In an effort to save coal and electricity, the time of evening services of the First Presbyterian Church here has been changed for the winter. The usual hour for evening services is 7:30 o'clock. Hereafter the Sunday evening sermon will be delivered at 4 o'clock in the afternoon.

ILLINOIS

Springfield—Frank Farrington, president of the United Mine Works of Illinois, and candidate for reëlection, denies rumors that he will resign to accept a political appointment. He declares that he has not been offered a political position and would not consider it if it were offered to him, and that he will stay with the organization as long as the members desire his services. Farrington led the other three candidates in the primaries by a safe margin. The election will be early in December.

Virden—Nine men were seriously hurt when the cage in the Montour mine here dropped 15 ft. to the bottom of the shaft. Most of the men were injured from the rebound of the cage after it struck the bottom. Recovery of one is doubtful. The cause of the accident has not been made known.

Edwardsville—Suits for $35,000 have been filed in the Circuit Court here against the New Staunton Coal Co., of Livingston. Frank Domerscik wants $25,000 and Anton Schmagel $10,000 for injuries alleged to have been received in the company's mine.

Collinsville—Everything was in readiness a few days ago for the reopening of the Big Mound mine, which had been abandoned for several years, when the topworks were destroyed by fire. The fire is thought to have started in the engine room. The loss is several thousand dollars and the reopening of the mine will be delayed several weeks.

Foreign News

Sydney, N. S.—Fuel Controller C. A. Magrath has undertaken an investigation into the complaint made by the Amalgamated Mine Workers of Nova Scotia, that the production of coal has been kept back at the Sydney mines on account of the coal areas of the Nova Scotia Coal & Steel Co. being bounded and broken by the areas of the Dominion Coal Co. Representatives of the miners claim that production is capable of being increased by at least 1000 tons per day.

Personals

Walter Thayer, general freight agent of the Pennsylvania R.R. lines east of Pittsburgh, Penn., has been appointed general coal freight agent to succeed Robert H. Large, deceased. Mr. Thayer, is 43 years old and has been in the service of the company for 22 years.

White L. Moss has resigned as manager of the White Star Coal Co., White Star, Harlan County, Kentucky, and has opened offices in Pineville, Ky., having completed organization of the White Moss Coal Co., which will operate mines in Harlan County. In addition Mr. Moss will represent several coal-purchasing organizations in this field.

L. D. Vaughn, of Grafton, W. Va., inspector of the Second West Virginia Mine District, has resigned his position and has accepted a position with the B. M. Chaplin Collieries, on their works up Scott's Run. Mr. Vaughn has been mine inspector for more than eight years past, and in that capacity met with the heartiest approval of both the mine owners and the miners.

J. B. Hoge, of Hazard, Ky., who for seven years has been in charge of the affairs and property of the Kentucky River Coal Corporation and its successor, the Slemp Coal Co., at Hazard, has resigned and will take up practice of law and publication of a newspaper at Hazard. He is succeeded by P. T. Wheeler, of the law firm of Miller, Wheeler & Craft, which has become the firm of Miller & Craft.

Obituary

John V. H. Cook, of Canonsburg, Penn., aged 60 years, a veteran of the Civil War and a prominent coal operator, died at his home on Nov. 12. He was a member of Company D, Tenth Pennsylvania Reserves, and took part in a number of important battles in the Civil War. He leaves his widow, three sons and four daughters.

Industrial News

Carlinville, Ill.—George F. Jordan, William H. Behrens and H. M. Minton have been appointed by State Fuel Administrator Williams as the fuel committee for Macoupin County.

Clayton, Mo.—Probate Judge Samuel D. Hodgdon, of Webster Groves, has been appointed chairman of the St. Louis County coal committee and has been given the privilege of naming the other members of the committee.

Lexington, Ky.—Two and a half million bushels of coal will be released for shipment on the lower Ohio River to cities and markets where shortage exists by means of an artificial flood which will be put into action 20 miles this side of Pittsburgh.

Charleston, W. Va.—The public service commission recently refused the petition of the Winifrede Railroad Co. for permission to increase its rates on coal 15c. a ton, but allowed a 5c. increase. The company now has a 10c. rate, which, with the increase allowed, will make it 15c. a ton.

Chattanooga, Tenn. — The Chattanooga Gas Co. has appealed to the Fuel Administration for relief in the way of a coal supply. The company has been using large quantities of oil for manufacture of gas, but is finding difficulty in obtaining oil. The coal shortage has greatly incresaed the consumption of gas.

New York, N. Y.—The Austin Co., industrial builders, of Cleveland, Ohio, has removed its Bridgeport, Conn., office to New York City. L. D. Stauffer will be in charge of sales; H. G. Phillips, of engineering, and K. A. Pritchard, of construction. The company makes a specialty of designing, building and equipping factories.

Pittsburgh, Penn.—Fuel to keep the city's pumping station going during the coal shortage was assured recently when Fuel Administrator D. W. Kuhn and his committee arranged for a continuous supply at the rate of 350 tons each day. Arrangement has also been made to replace the depleted reserve of about 4500 tons usually kept at the different stations.

Ambridge, Penn.—Shortage of coal is causing inconvenience to local residents and to manufacturers, many of whom will be forced to close down unless relief is obtained. In the Conway yards a few miles down the river are thousands of loaded coal cars. Many of these cars are consigned here but it is impossible to obtain prompt movement of freight because of the congestion.

Louisville, Ky.—By an agreed order the case of the Harlan Coal Co. against the Harlan Gas Co., involving a contract with several months to run, has been dismissed in the local courts, settled. The plaintiff had obtained an injunction compelling the defendant company to live up to the terms of the contract which provided for the delivery of the defendant's output of gas coal to it. No statement as to the terms of the settlement is available.

Washington, D. C.—With a view to making the general situation known to the public, the National Coal Association has undertaken a survey of all phases of the coal industry. A study will be made of questions of car shortage, relative earnings of mine workers and like details. The survey will probably go into the matter of the nationality of alien workmen, in view of enemy propaganda that may be found at work in connection with labor disaffection.

Knoxville, Ky.—Priority orders relative to movement of coal are getting results in the way of expediting this movement, according to statements of operators and shippers in the southeastern Kentucky-Tennessee field. The Southern Ry. is declining to supply open-top cars to the wagon mine operators and, instead, is providing them with box cars. It is contended that they can be more easily loaded from wagons and the length of the loading wait is not increased by this practice.

Lexington, Ky.—The Lexington Board of Commerce has filed a complaint before the Kentucky Railroad Commission, asking for remedying of the present alleged discrimination of the Louisville & Nashville in the matter of rates on bituminous coal to Lexington. It is alleged that the rate to Lexington is often as much as 40c. on a ton higher from principal coal producing points than it is to Covington, Louisville and Newport. Henry Burch, of Louisville, is attorney for the Board of Commerce.

Altoona, Penn.—The Russet Coal Co., supplying a large tonnage for domestic use into Altoona, is now producing about 350 tons per day, the entire output being hauled from the Buckhorn, where the mines are located, into Altoona by motor truck. The Russet company has started work on a new outside tramway one mile in length, which will shorten the truck haul to the city by four miles, or eight miles on a round trip. The company is also installing storage-battery locomotives. George W. Loudon is general manager.

Toledo, Ohio—Considerable activity was shown at the Toledo docks of the Hocking Valley and Toledo & Ohio Central railroads during the week ending Nov. 16. The Hocking Valley docks handled 140,000 tons during the week, as compared with 126,000 tons the previous week. The total handled by the docks since the opening of navigation is 4,390,371 tons. The Toledo & Ohio Central R.R. handled 62,000 tons during the same week, as compared with 61,000 tons the previous week. The total handled since the opening of navigation is 1,136,742 tons.

Louisville, Ky.—Evidence in the case of the Ohio Valley Coal Operators' Association against the Illinois Central and other railroads connecting the western Kentucky field with northern, western and southwestern markets has been completed and the Interstate Commerce Commission has set Dec. 22 as the date for the oral argument to be held in Louisville. By this proceeding the western Kentucky operators hope to be able to get into the markets indicated on the same levels as to freight rates as their competitors, especially in southern Illinois.

Lexington, Ky.—Kentucky produced 25,292,767 tons of coal in 1916, an increase of 4,019,098 tons over the previous year, according to the report of C. J. Norwood, Chief Inspector of the Department of Mines. This showing gives Kentucky rank as fifth in the list of coal-producing states. There are 500 mines, employing approximately 35,000 men. During the last year there were fifty-three fatalities. Letcher County takes first rank, the various fields showing as follows: Northeastern, 10,653,907 tons; western, 7,727,428 tons, and southeastern, 6,911,432 tons.

St. Louis, Mo.—Three municipal coal stations have been opened in small portable buildings. Ten more are to be opened. The cost of coal, including freight, is to be $3.47½ a ton. It will be sold at 14c. a bushel, in lots of not to exceed five bushels at a time, and the purchaser will have to make his own delivery. The St. Louis Coal Club, at a meeting at the Annex Hotel, approved the plan to sell coal to the poor at cost, but disapproved of the method of distribution. They advocated distribution through the charity organizations and offered the use of their yards for storage.

Chester, Penn.—Thousands of families in this city and adjoining sections are without coal, the Delaware County fuel commission declared, and despite the promise of relief made by Fuel Director Potter the district is suffering more severely than at any time since the shortage was evident. A "war meeting" of the dealers has been held and a demand that strong pressure be brought to bear to relieve the fuel famine. Most of the large industries have thousands of tons stored up in their yards and are in no immediate danger. Smaller concerns are perturbed over the abnormal conditions.

Columbus, Ohio—Under a ruling of the Ohio Supreme Court which has just been made, the Black Diamond Co., operating a railroad in Washington County, Ohio, for the purpose of serving its own mines, will be compelled to give car service to other mines along its line. Litigation arose over its refusal to give such service after purchasing the line of railroad in question, on the ground that the road was private property. The Attorney General prosecuted the suit, asking that the company either be compelled to give service to other mine operators or that it be ousted from the privileges of its corporate charter in Ohio.

Altoona, Penn.—In the campaign for the conservation of coal on the Middle Division of the Pennsylvania R.R., N. W Smith, superintendent, is pursuing a unique and interesting plan. Both firemen and engineers are writing their own opinions as to how coal may be saved, and there is an interesting rivalry in evidence as to the least number of shovels of coal necessary between Harrisburg and here. According to records on file, a total of 248 shovelfuls of coal were used. On one section, a distance of 48 miles and another of 64 miles were covered without the use of any coal. The new record made Nov. 16 is 132 miles, using 214 shovelfuls of coal.

St. Louis, Mo.—St. Louis coal dealers, under orders of the St. Louis Coal Committee, are now making daily reports of coal on hand at beginning of day, receipts in tons, disbursements in tons, coal on hand at end of day, coal in transit, coal sold at yards, total amount delivered and unfilled orders. With each load of coal delivered must go a scale ticket with the name of the field from which the coal was obtained stamped or written in ink on it. The fields to be specified are Big Muddy, Carterville, Middle Grade, Mt. Olive and Standard. Dealers must register and receive permits. Consumers using more than one carload a week are also required to register. Coal men have been asked by the committee to organize in three groups—operators and jobbers, retail track dealers and wagon load dealers.

Market Department

GENERAL REVIEW

Mild weather eases a condition which would otherwise be acute. Little improvement in transportation, which is the key to the entire situation. Nowhere does the supply appear to equal the demand.

Anthracite—Shipments, especially to tidewater, show little improvement. Only by extreme exertion can retailers even approximate keeping up with their orders. Many yards are bare and little coal is to be had. What coal is moving outside of contract obligations is quickly gobbled up by dealers anxious to secure even a small supply. So low have run the receipts of coal that in many instances drivers, salesmen and collectors have been laid off, the dealer preferring to take his chances of securing help when necessary and cutting down immediate expenses to keeping his help when business is so slack that this help is utterly nonproductive. The City of New York recently closed a sizable contract at a rather high price. The penalty clause in the specifications is here relied upon to cut down the actual price paid to a reasonable figure. It is reported in many places that receipts of coal have been greater this season than a year ago, and it is consequently believed that many domestic consumers have considerable quantities in storage. This, however, does not apparently lessen demand, but it is thought that it will begin to do so by about the first of next January. The amount of anthracite already shipped to the Northwest doubtless appreciably exceeds the quantity sent to that region last year.

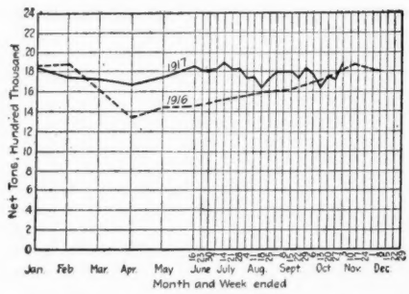
Bituminous—The production of bituminous coal appears to be more dependent upon car supply than upon labor, although labor is doubtless scarce. Reports are heard from many lacalities that coal producers would be glad to sell fuel in the open market and at the government's price, providing means of transporting it would be furnished by the purchaser. The car supply throughout the Indiana and Illinois field has been somewhat better recently, while in Pennsylvania districts it has been worse. Nowhere does this car supply appear to equal the demand. As to sizes, grades and quality, as well as price, few questions are asked. The consumer is so anxious to receive fuel that he is willing to take almost anything that will burn. Less is heard nowadays of the offering of prices in excess of government regulations than was the case a few weeks ago. People are becoming reconciled to government regulation and are trying to make the best of it. In several cities precautions have been taken to prevent suffering among domestic consumers. The dealer who sells in small lots is receiving particular attention. Also in many places single deliveries to householders seldom exceed one ton, and in some cases not more than one such delivery is made each ten days. The mild weather of the past week has done much to relieve and forestall actual suffering. Should it continue for a few weeks longer, there would be little danger of any great crisis this winter. The market is, however, taking the country as a whole, deluged with orders to such an extent that it is doubtful if deliveries on many of them can be made for weeks, or possibly even months, to come. With sufficient transportation to render possible continuous working of the mines, the present scarcity of fuel would soon be relieved.

Lake Trade—Shipments of coal by Lake have been growing less from week to week for some time. This process will doubtless continue until Lake navigation closes. It is believed that already more fuel has proceeded up-Lake than last year. The needs of the Northwest will thus be well cared for. During the past week many vessels after discharging iron ore proceeded up-Lake in ballast only, not waiting for coal loading. It has been urged that the season of navigation be prolonged as long as possible, even to the employment of ice breakers.

A Year Ago—Cold weather stimulates anthracite market, but situation well in hand. Growing confidence that high prices on bituminous are here to stay. Twelve-month contracts negotiated at close to ruling prices in spot market. Lower temperatures force prices to still higher levels in the Middle West.

COAL PRODUCTION

Not since early July has the production of bituminous coal reached as high a point as during the week ended Nov. 10. The total output, including coal made into coke, is estimated at 11,300,890 net tons, an average per working day of 1,883,482 tons. This was a gain of 4.7 per cent. over the preceding week, and approaches the mark of 1,902,864 tons per day set during the week ended July 14.



The large weekly output was the more remarkable in view of the fact that the week's production of beehive coke was not unusual. It is estimated that 615,432 net tons were produced by beehive ovens, an average of 102,572 tons per working day. Anthracite shipments were reported as 38,775 cars, a figure still far below the level maintained during October.

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL CARRYING ROADS WEEK ENDED:

District:	Oct 20	Oct. 27	Nov. 3	Nov. 10
Bituminous shipments, 114 roads	175,246	189,589	192,419*	201,540†
Anthracite shipments, 9 roads..	42,590	42,338	31,314*	38,775†
Beehive coke shipments, 4 roads..	12,946	12,900	12,234*	12,634†

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

The Iron Age—The steel industry is making harder work than ever of its effort to meet war conditions, with an increasing handicap from fuel scarcity and transportation failures, and the limitation of output due to the conflicting purposes of those in authority from whom steel makers now take their orders. Banking of blast furnaces from coke shortages keep up and at Youngstown steel output at some plants has been cut nearly 50 per cent.

Bradstreet's—Governmental buying, the all overshadowing feature in trade and industrial lines, makes for a very large volume of business, irrespective of operations for civilian account and increasingly diverts production from non-essentials to those things that are urgently needed for the prosecution of the war. The stream of business in ordinary channels runs quite freely, considering that the government has preference in the matter of deliveries, but there is some evidence of conservatism and more or less uncertainty respecting the future trend of prices and the course of the stock market.

Dry Goods Economist—Retailers in various centers, from Boston to Seattle, report steady gains, with marked improvement in collections of current accounts. In the principal centers money continues plentiful, though interest rates are firm. Securities show somewhat greater strength on the New York Exchange. The new war taxes are beginning to engage public attention. In the aggregate they bid fair to make a substantial dent in the average income and thereby aid in curtailing the sale of luxury articles.

The American Wool and Cotton Reporter—Diversity of demand was the feature of the week's business in wool. Buying for Government orders and for civilian purposes continued in considerable volume.

Marshall Field & Co.—Current wholesale distribution of dry goods is running ahead of the heavy shipments for the same period a year ago. The total volume of road sales for both immediate and future deliveries has been in excess of the same week in 1916. Merchants have been in the market in fewer numbers. Collections are well ahead.

Atlantic Seaboard

BOSTON

Conditions only worse as season progresses. A few rehandling concerns are selling for delivery inland, but otherwise no spot offerings. Interruptions in mining are frequent and car shortage serious. Poor dispatch at Hampton Roads and receipts here diminish in consequence.

Bituminous—The weeks pass and still no appreciable relief for New England. A few rehandlers at ports like Boston, Providence and Portland are selling limited tonnages to such consumers as need fuel within a short period, and for the present the price, f.o.b. cars, is based on contract prices f.o.b. vessel, plus the Government rate of freight and other charges. Such plants, however, seem practically the only sources of free coal at this writing. No quotations are made, but it is assumed that prices for such delivery are not far from $8@8.50 per gross ton. It is next to impossible to arrange for more than a small shipment on this basis and the demand far exceeds the supply. If transportation on which the rehandlers depend for current supply should be curtailed to any degree, then it is likely that free coal now to be had would quickly disappear.

A good deal is heard about New England movement being given priority in a limited way after Lake navigation ceases. Already shipments to the Northwest are said to be decreasing, but no corresponding increase to this territory is thus far observed.

Hampton Roads dispatch is slower than for some weeks past. Practically every coastwise bottom meets with delay in loading and there are extreme cases even today, when expensive ships are detained a fortnight or more awaiting coal. The Tidewater Coal Exchange is now in full operation, yet there is no speeding up that New England buyers can notice. No free coal is heard from either f.o.b. Norfolk or in cargoes on a delivered basis; it is the utmost a shipper can do to keep supplied the consumers who have contracts.

The order suspending priority to the Northwest from Midnight on Sunday, Nov. 18, to midnight on Monday, Nov. 19, seems to have accomplished little for this territory. Restrictions as to destination of cars must also be dealt with and New England should have a real priority order that would give consumers better deliveries on their contracts of many months' standing.

There is beginning to be comment here over the heavy movement of coal to the Northwest through the instructions of the Priority Board. Reliable figures show that the tonnage of bituminous shipped up the Lakes this year aggregates about 375,000 tons in excess of that of 1916, anthracite making about the same showing. It appears therefore that in taking care of the Northwestern section the Priority Board gave that area more coal than had been shipped there last year. Most of this coal works its way inland from Duluth and Superior, while a liberal proportion of it goes into Canada. It begins to be suspected that the operation of priority was not so much to look out for the people of the Northwest who doubtless needed no more coal than they gt last year as it was to give return hauls to the railroads from the Lake ports.

This past season the heavy shipments of ore down the Lakes have broken all records, and as all this ore comes to ports like Toledo, Sandusky, Ashtabula, Cleveland, and others, for transshipment into Ohio and Pennsylvania, it is quite natural the railroads should want return loads of coal in their cars on their northward movement to the Lakes. It is obvious that such movement both ways would be much more attractive for the railroads than movement to New England, for instance, and coal men here are querying whether it is altogether for the interest of the coal-concuming public to have such situations handled

from the purely railroad point of view. In other words, coal consumers in this territory have been injured without really knowing the cause of the difficulty.

Anthracite—Shipments are as discouraging as ever, particularly at Tidewater. Movement has been extremely slow and only through much exertion in every direction can retailers in the cities keep up with the demand. The weather has been mild; otherwise the situation would be very serious.

The first local fuel committee report in New England to receive official sanction was that for Boston made public Nov. 14. A maximum retail price of $9.50 for stove and $8.50 for pea per ton of 2000 lb. was fixed, the price for stove also applying to broken, egg and chestnut, whether red ash or white.

For the benefit of thoes who buy in small quantities and who will provide their own receptacles and transportation from the retail yards, 67 coal depots have been established, covering every section of the city. At these depots maximum prices as follows are charged: For stove, 11c. for 25 lb., 22c. for 50 lb., and pro rata up to $8.80 per ton, which is the maximum price. For pea the price is fixed at 20c. for 50 lb., and pro rata up to $8 per ton. Except for the latter feature and for the price on red ash the newly approved prices are the same that Boston retailers have charged for more than a year, although costs on all sides have increased materially.

The Boston fuel committee has taken a very fair position, explaining to the public in detail some of the conditions that bear down hard on the dealer. It was noted that about as many coal dealers made less than 25c. per net ton as made more than that amount, and that 25c. per net ton did not impress the committee as an unreasonable profit. "After all," said the committee, "the greatest need of this community is sufficient coal. The question of price is substantial, but the question of supply is all-important." The public was advised that the prices fixed could only be tentative and temporary and that as conditions changed the committee would try to meet them.

NEW YORK

Anthracite supplies low and several yards are without coal. No surplus at the loading docks. City departments closing small contracts at good prices. No free bituminous to be had here. Many plants running low and the B.R.T. asks permission to stop heating cars during rush hours.

Anthracite—The efforts of the Fuel Administration forces to relieve the shortage at this harbor and to increase the receipts of New York City dealers have not as yet shown results. Coal is not moving in larger quantities and there are several yards practically closed so far as deliveries are concerned, although the employees continue to report for work each day, the dealer not knowing just when a loaded barge may tie up at his dock.

Conditions at the various loading docks are tense. There is no surplus, all of the coal, whether company or individual product, being already under purchase before its arrival. Operators are not taking any new orders unless those already on their books are filled.

The agreement entered into between the operators' and miners' representatives whereby the mine workers will receive increases ranging from 15 to 44 per cent., provided Dr. Garfield permits the advance to be added to the price of coal, was no surprise to most local coalmen, but they are not entirely of the opinion that the entire increase will be added to wholesale prices. It was thought by some that Dr. Garfield will make the operators shoulder a portion of the proposed increase which it is estimated amounts to about 45c. per ton.

Because of the failure to get sufficient coal to meet all demands the retail dealers are doing their best to alleviate the conditions by making part-ton deliveries, except in the case of large consumers, and then only where it is imperative that a large tonnage is absolutely necessary. Most yards are clean of domestic coals, while the dealers have orders on their books calling for many thousand tons. Special attention is being paid to the cellar dealer and it has been suggested that if these dealers cannot get sufficient coal to take care of the small buyer that city-owned yards be established and that coal be sold in bag lots of from 50 to 100 lb.

The stringency of the market is being felt by the various city departments and efforts are being made to close contracts for the monthly needs of several of the departments. One contract closed last week was for nearly 8000 tons of rice coal for delivery during December at $6.97 per ton. This contract was let under the standard specfications calling for heavy penalties.

The local Fuel Administrators are keeping close tabs on the amount of coal received by the dealers and are watching its distribution. Hoarders, they say, will be quickly dealt with.

The steam sizes are in good demand with little to be had. Quotations vary considerably, much depending upon the urgency of the buyer and the price at which the jobber has already contracted. Mine quotations for Buckwheat No. 1 vary from $4.25 to $4.50; rice from $3.25 to $3.40, and barley from $2.25 to $2.35.

Current quotations, per gross tons, f.o.b. Tidewater, at the lower ports are as follows:

	Circu'ar	Individual
Broken	$5.95	$6.70
Egg	5.85	6.60
Stove	6.10	6.85
Chestnut	6.20	6.95
Pea	4.70	5.75
Buck	3.95@4.65	5.50@6.00
Rice	3.40@3.60	4.50@4.75
Barley	2.90@3.15	3.30@3.50
Boiler	3.15@3.40	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The ruling of the Fuel Administrator whereby jobbers are permitted to add a 15c. commission to coal they contracted for previous to the fixing of prices by the President has had no appreciable effect on the spot coal market here. Conditions respecting that phase of the situation show no change. There is no spot coal to be had here and consumers without contracts and those who are more fortunate in having closed contracts early in the year, are swarming the wholesale offices every day. In fact it is a surprise to some dealers that many plants have not suspended operations until the coal supply improves. Some betterment is looked for shortly now that the Lake season is about over.

Contract coal movement is good and most consumers are getting sufficient coal to keep their plants going but long hours of operation require considerable more coal.

That the public service corporations are beginning to feel the stringency of conditions is apparent from the application of the Brooklyn Rapid Transit to the Public Service Commission that it be permitted to discontinue heating its cars during the rush hours. The application is now under consideration and hearings have been held. Still another effort to conserve fuel is the order of Dr. Garfield curtailing the lighting of many electric signs along Broadway except at certain hours.

Operators of mines of central Pennsylvania are anxiously waiting for a decision from the Washington authorities with regard to a revision of prices. Production is greatly hindered by car shortage which continues to run from 30 to 50 per cent. The railroads also require more coal.

Bunker demands are not as brisk inasmuch as most vessels instead of waiting at this harbor for supplies go to one of the Southern loading ports and then proceed to their destinations.

Buyers from New England are numerous here but few sales are made. Most of them come to this city for the purpose of hurrying shipments.

PHILADELPHIA

Anthracite shortage unabated. Some see relief by Jan. 1. Reports of hoarding conflict. New retail prices. Doubt as to settling of wage dispute. Control of bucket trade arranged. Bituminous situation does not improve. Shortage serious. Car supply prime factor. Many contracts to expire soon.

Anthracite—If it were not for each week's increased demand, it would be possible to report that progress has been made during the last few days. Only the moderate weather has prevented a serious situation. Coal is arriving in greater quantities, but as it is hauled away promptly there is no change in the appearance of the yards. Apparently all consumers are trying to replace each ton consumed, so that their piles will not diminish.

Some interests seem to think if ordinary demands can be met up to Jan. 1, without the occurrence of severe weather before then, there will be some letting up of the pressure. Those people who have laid in excess stocks will by that time cease their efforts to accumulate more coal than they will need. However, this makes no allowance for congested rail movement which will likely reach its maximum by that time. There are reports of the motive power of the roads being in bad shape on account of a scarcity of shop labor to keep up necessary repairs.

The state coal controller has complete authority to supervise coal distribution in a manner to prevent householders from buying beyond their immediate needs. No one, however, will predict how this ruling can be carried out. The chairman of the local fuel committee insists that coal has not been hoarded here to any extent. The immense increase in the industrial population is a large factor in the increased consumption. In one suburban section dealers claim there are 1000 more buyers of coal than this time last year. The extent of hoarding will probably not be known, but every retailer has personal knowledge of at least a few cases where people claiming to be almost out of coal had so much that delivery could only be made with difficulty.

Despite big production there are many empty coal yards in the city and every dealer is swamped with business. Many of them are refusing additional orders, while others are caring for trade only in the immediate neighborhood. The scarcity in West and South Philadelphia (Pennsylvania R.R. deliveries) is still acute, with some tendency to improvement, but the car situation has delayed any marked progress. On the Philadelphia & Reading Ry. tracks shipments have been fair, but if present plans are successfully carried out, the improvement on both roads will be noticeable before the end of the month.

There has been considerable retrenchment in the retail trade. Many dealers have laid off drivers, taking a chance of getting others when coal comes. A number of them are dispensing with their salesmen, while few have use for collectors. More cash sales are being made than ever before and the dealers are prompt in the payment of their accounts. One large company boasts that on the 20th it did not have one local October account due.

One of the largest retail concerns announces the following prices: Egg, $8.35; stove, $8.40; nut, $8.65, and pea, $7. The only change from the first two weeks of the month is an increase of 10c. per ton on pea coal. The highest prices recorded are those of a firm dealing almost entirely in independent coal. One dealer, in West Philadelphia, announced that as he has no coal to sell he has no prices to offer. This concern has had no coal for the two weeks covering the period set by the Government for computing prices.

The trade calmly received the announcement from Washington that the miners and operators had about reached an agreement in their wage conference. There was no doubt at any time that the miners would receive an increase, but inasmuch as the 20 per cent. agreed upon between the two interests is contingent upon the Fuel Administration granting an increase in the mine prices of coal, there seems likely to be some delay before the new scale will become effective. In the event of a wage increase being granted without an increase in mine prices it is believed that the few individual companies who have not as yet taken the full advantage of 75c. differential will lose no time in doing so.

A means has been found whereby the bucket trade of coal peddlers can be regulated. There is a city ordinance providing that coal sold in quantities less than a ton or its fractions must be sold by the bushel of 75 lb. This matter thus hinges on the enforcement of the law and the city authorities will willingly coöperate to that end.

Another plan is the suggestion of President Warriner, of the Lehigh Coal and Navigation Co., to establish a fuel stock where the peddler can be reasonably sure of getting a supply for his customers. This is hoped to be accomplished by the coal committee designating a certain number of cars to be set aside in coal yards of the regular dealers in various sections of the city.

Much confusion was caused this week by the frequent changes in the embargoes of the railroad companies. Monday afternoon the Pennsylvania R.R., after having been open for coal only 10 days, notified the shippers another embargo would be placed that evening. The next day it was reported the embargo had been cancelled to the extent that shipments would be received from connecting lines when destined to Philadelphia only; all other points to remain embargoed until further notice. Following this, the entire restriction was lifted, but in the meantime connecting roads had notified shippers of embargoes laid by the Pennsylvania and much confusion resulted. The Baltimore & Ohio embargo via Park Junction has also been removed.

As to sizes, egg and stove are short and will continue so until the Government's requisitions are greatly reduced. Chestnut and pea are easier and are gladly accepted. The steam sizes are very active and prices range about as quoted last week. Buckwheat sells from $4 to $4.25; rice, $3 to $3.25; barley, $2 to $2.25, and culm of ordinary preparation, 55c.

The prices, per gross ton, f.o.b. mines for line shipment and f.o.b. Port Richmond for Tide, are as follows:

	Line	Tide		Line	Tide
Broken	$4.55	$5.70	Buck	$2.90	$3.50
Egg	4.45	5.75	Rice	2.40	3.40
Stove	4.70	6.00	Barley	1.90	2.15
Nut	4.80	6.05	Boiler	2.20	3.30
Pea	3.40	4.30			

Bituminous—There is no improvement in the situation and a serious shortage still exists. The greatest sufferers are the smaller industries, as the public utility plants and the larger manufacturers mostly have fair stocks ahead. In the shipping offices there is an almost continuous string of callers who implore for coal, claiming their plants will have to close down. Beyond regretting their inability to help them, the shippers confess themselves helpless. The chief difficulty continues to be the car supply and, until this is improved, nothing in the way of increased production can be accomplished.

Of course, the labor supply is not increasing, but in a way, is adequate to meet the working time of a good many mines. However, if the car supply was even 90 per cent. sufficient, the labor shortage would appear much more acute. As it is, when a mine is at times given a good run of empties, the labor to be had is not equal to the demand. Some of the leading mining officials have of late been calling attention to the serious effect of the labors of propagandists, who are secretly working with partial success among the foreign element to reduce production.

Some districts still report that the new wage agreement, with penalty clause, remains unsigned by the men, but they are gradually coming into line and it is hoped to bring them all around eventually.

There is some doubt if the expiration of many contract agreements on Jan. 1 will have the effect of throwing any spot coal on the market, as it is felt that between the Government orders and railway fuel requirements, together with the remaining contract business, there will still not be sufficient coal to go around. As it now stands there is little if any coal to be had at the Government price of $2.45 per net ton.

There continues to be much discussion over the matter of priority orders and many arguments pro and con are heard. There is a strong feeling that the coal men themselves with their years of experience are fully able to distribute the limited supply to the best advantage. However, the priority instructions are being strictly complied with insofar as is possible.

BALTIMORE

Situation here, under the worst transportation conditions experienced in years, is tense, as demand increases and supplies lighten. Consumers burning any kind of fuel they can secure. Anthracite situation unsettled. Fuel administrator still missing.

Bituminous—Under transportation conditions ,which at times cut off this city for several days with hardly a pound of hard coal and with the receipts of bituminous so poor that not one-fifth of even urgent contract demands are being met, the trade here is facing a serious situation. Appeals for fuel are pouring in on all classes of coal men, and for the most part are unanswered. Many large industries are among those desperately short of stocks, and they are taking any kind of coal they can get without question as to quality.

A part of the coal that manages to come through to the Tidewater pool has not been up to standard and has been ordered out of the pooling arrangement. This coal, however, is now allowed to be sold at Government figures or to be delivered on contracts at higher figures direct from shipper to consumer. Any such coal is now eagerly gobbled up. Some of the plants here that cannot get soft coal have recently entered the purchasing field for the small sizes of anthracite that are not ordinarily burned here. Thus some buckwheat, rice and barley coal has been distributed to plants that have equipped themselves with special blowers for burning this fuel.

Anthracite—Pending the appointment of a fuel administrator and official action setting profit margins, etc., the hard-coal men dole out by the quarter and half ton, or sometimes a whole ton at a time to some especially good customer, the little stock he may still have in his yard. Some are without even little stocks. Many dealers here have seen from a week to ten days go past without receiving a pound of coal. Much coal awheel is still tied up between the mines and this city.

With colder weather apparently ready to descend, there is a genuine alarm felt at the outlook. Several local coal men went to Philadelphia recently to attend the meeting at Waidner's Hall for the purpose of launching in strong fashion the new Atlantic States Coal Merchants' Association, which was originally worked out in Washington by the Washington and Baltimore coal exchange officials and later sanctioned by the New York retailers. The move will be made national in scope. Plans advanced to the Government for what were considered a reasonable profit margin and regulation for hard-coal retailers, apparently went awry, and the move to organize more thoroughly was decided upon.

COASTWISE FREIGHTS

No change can be reported this week in any direction. Three dollars is still the rate on barges from Hampton Roads to Boston and $2.50 the corresponding rate on steamers, but these quotations are only nominal because loading conditions do not permit new charters at this writing.

For New York loading, barges for Long Island Sound ports are still quotable at $1.10 to $1.25, with few takers on accouna of the difficulty in getting bottoms accepted by shippers.

Lake Markets

PITTSBURGH

Decreased coal production owing to railroad congestion. Offerings of coal at mine, subject to cars being furnished by buyer.

There is still less coal, but apparently a better distribution, and perhaps less hardship to consumers. The railroads are badly congested, yards and sidings being full of cars loaded with coal and coke. There is no difficulty any more about buying coal on account of the price. Operators would be glad to sell coal at the set price if it could be moved, and any buyer who can take care of the movement can place his order.

The steel mills at Youngstown, which recently secured priority orders at Washington, have secured considerable relief, and while they are not operating all departments in full, are doing much better than ten days ago. Much of their coal is personally conducted. The Duquesne Light Co., the chief distributor of current in this district, which carried large advertisements in the daily papers to buy coal at the set price, now has an arrangement in good working order, whereby three days each week it can run solid trains from its mine to its plant, thus operating the mine full and providing thereby three-fourths of its requirements.

Throughout the district loadings, both Lake and commercial, have been lighter in the past few days than for many weeks, and there is no hope of improvement until some means can be found for relieving the congestion on the railroads. There is danger of conditions growing worse before they are better, as winter weather would play havoc with the railroads in their present condition. Lake shipments have already decreased to such an extent that their entire stoppage at the close of the season promises less relief than was expected.

The movement of coal in the open market has been extremely light. We continue to quote slack at $2.20@2.35, mine-run at $2.45@2.60, and screened at $2.70@2.85, per net ton at mine, Pittsburgh district, the higher price being on sales made by jobbers.

BUFFALO

Some regulation-price coal but no general improvement in the bituminous trade. Car shortage said to be worst of all now. Anthracite moving fast by Lake; local demand less.

Bituminous—Some of the jobbers now report that they are getting a little coal at Government prices, but the entire amount is small, whether obtained in that way or on contract. The difficulty is largely on account of the lack of cars. While the trade does not give up the idea that the regulation price has cut down the movement, it is admitted that coal would now move at a pretty good rate if there were cars enough to carry it. No other scheme will bridge over the difficulty till the railroads move the coal as it is mined. The consumers are anxious, but not in distress.

An unusual effort is making to keep in touch with the authorities, as much with the idea, however, that a modification of the present policy may be made as of anything else. The belief that the fixing of price was not the way to surmount the difficulty has always been held by the coal men. If the miners and railroads cannot be brought up to a better efficiency, it does not matter much what else is done.

Several towns in this section are short of coal, but the Buffalo officials claim to have a good supply in sight and are not worrying. Stories of factories ready to close on account of lack of fuel are not so numerous as formerly, though few concerns have a large supply. It is felt that certain changes in the situation are not only necessary to the success of Government control, but that they are going to be made soon. Consequently the temper of the trade improves somewhat.

The quotations per net ton, f.o.b. Buffalo, remain as follows:

	Slack	Lump
Pittsburgh	$3.75	$4.25
Bessemer	3.70	4.20
Allegheny Valley	3.60	4.10

The movement of smithing and cannel is light and asking prices vary widely, but the jobber is allowed to ask from $1 to $2 over the regulation price. Cannel competes with anthracite and sometimes sells close to its price.

Anthracite—Independent jobbers are doing something of a trade in anthracite, all dependent on the amount that they can obtain. They ship what they can to Canada, where the price limit troubles them less than it does here. The continued mild weather has reduced the city demand, though the number of consumers who claim to be out is rather large. The local fuel administrator is making a survey of the city and sends a policeman to all houses claimed to be without coal. If the claim is correct, some is at once furnished. In this way the bogus reports of distress are cut out and the coal goes where it is needed. Not till the Lakes close, however, will the city supply be ample.

The amount moving by Lake is increasing, the large shippers being very active. For the week the amount to domestic ports was 136,900 net tons, of which 65,700 tons cleared for Duluth and Superior, 38,400 tons for Milwaukee, 32,000 tons for Chicago and 800 tons for Port Huron.

Tonnage is a little hard to get, as the ore carriers mostly rush back light for another cargo and grain is arriving slowly. Duluth pays 50c. freight, Chicago 85c. and Milwaukee $1. Most of the coal is shipped on contract.

Small tonnages of "smithing" coal are finding their way to this market. Recent quotations are $6@6.25 per gross ton, with not too much stress on quality. This, together with the more or less free movement of coke from ovens in this vicinity to points far off, is a commentary on the absence of any regulating order that will apply. Several anthracite barges are now customarily loading coke for New York, and, needless to say, the movement of the barges is not accelerated thereby.

TORONTO

Little coal coming forward. Many yards empty and dealers refusing orders. Improvement expected after close of navigation.

Only small quantities of coal have arrived from the mines lately. Consequently many yards are empty and dealers are refusing orders. These conditions are regarded as merely temporary, and because of large shipments to Upper Lake points before the close of navigation. It is anticipated that coal will be coming in freely before the end of the month.

Prices are unchanged and owing to the action of the coal controller, likely to remain steady. Quotations for best grades per short ton are as follows: Retail anthracite, stove, nut and grate, $9.50; pea, $8.50; bituminous steam, $9, slack, $8 to $8.50; domestic lump, $10; cannel, $11; wholesale f.o.b., cars at destination, three-quarter lump, $7 to $7.50; slack, $6.85 to $7.

DETROIT

Demand for steam coal continues strong, with supply limited. Weather conditions ease domestic trade. Anthracite supply short. Lake shipments shrink.

Bituminous—Inquiries for steam coal are maintained in large volume while supply shows no perceptible improvement, according to jobbers. There appears to be a more cheerful sentiment in the market, however, perhaps due to action of the Michigan coal administrator, in announcing that jobbers who had bought coal on contract, prior to Aug. 21, at prices higher than those fixed by the Government, will be permitted to sell this stock at a price approved by the coal administrator and not to exceed in amount the contract purchase price, with a 15-cent commission.

Jobbers say no free coal can be found on tracks in or around Detroit and that they are meeting with disappointment in their search for coal in mining districts that can be bought at the Government's mine prices. The coal reaching the local market is said to be practically all stock applying on contracts made before the Government's

mine prices were effective. Some of the larger consumers in the local market are reported to have acquired considerable of a reserve from the delivery of such contract stock. Smaller concerns, however, are working along on a hand-to-mouth basis with little assurance of continued supply.

Indian summer temperatures during the last week have given important assistance to the Detroit coal administrator in reducing the pressure from household consumers and affording opportunity for distribution over a larger area of the coal on hand. As deliveries are made in quantities of one ton or even less, an interval of severely cold weather would speedily bring urgent appeals for additional fuel.

Anthracite—The movement of anthracite into Detroit is still much below normal. Stocks in many retailers' yards are low, and in others exhausted. Domestic consumers accustomed to the use of anthracite have not all been able to obtain it even through the fuel administration department and quite a number were supplied with bituminous mine run or other fuel.

Lake Trade—With the close of navigation on the Lakes, probably less than six weeks distant, shipments by boat are steadily diminishing. Many vessels made the upbound trip without cargo during the week.

COLUMBUS

The coal trade in Ohio is slightly easier. Domestic demand is still strong, but warm weather has been helping some. Production fairly good.

The coal trade in Ohio has been slightly easier during the past week, due to continued warm weather and a better movement from the mines to consumers. Steam users are getting sufficient fuel to operate from hand to mouth, and little inconvenience has been caused. Prospects are for a continuation of present conditions, unless a cold snap causes panic in the market.

Retailers have been getting some coal, principally from the shipments when the priority order was raised by the federal fuel inspector. These have been used to take care of emergencies in the trade, in many instances after investigation by the county fuel committees. The rule is being followed to deliver only a small amount to each family in order that the available supply will go around. Retail prices are firm at the levels which were established several weeks ago. There is a good demand for Pocahontas with stocks rather scarce. West Virginia splints are also in good demand and stocks are fairly ample. Anthracite is scarce and prices high. The most of the coal on the local market comes from the Hocking Valley, Jackson and Pomeroy Bend districts.

Production is on the increase, as the car supply has been pretty good during the past week. The Hocking Valley is credited with 80 per cent. of normal and the Jackson field also produced a good tonnage under the stimulus of higher prices. Pomeroy Bend reported about 70 per cent. output during the week. Eastern Ohio had a fair car supply and the output in that field is estimated at 65 per cent.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	$2.70	$3.05	.....
Inch and a quarter	2.70	3.05	$2.70
Three-quarter	2.70	3.05	2.70
Nut	2.70	3.05	2.70
Egg	2.70	3.05	.....
Mine-run	2.45	2.70	2.45
Nut, pea and slack	2.20	2.70	2.20
Coarse slack	2.20	2.70	2.20

CINCINNATI

Heavy demand with an inadequate supply of fuel continues to prevail, many dealers being unable to meet emergency demands. Prices are now definitely fixed by the Government, but supply remains a question.

While comparatively mild weather continues in this vicinity, thus holding off the rush of small emergency orders which always result from severe cold, the demand for both steam and domestic coal continues to run considerably in excess of the available supply, as has been the case for some time. The continued heavy movement of coal to the Lakes prevents any considerable amount being diverted to way points, such as Cincinnati, save when specifically so ordered to prevent distress. The comparatively small amount remaining free for local use is not enough to permit of any reserve supply being accumulated.

The Government and state authorities in charge of the fuel situation promise relief when the Lakes are closed, but in the meantime it is necessary to guide distribution accurately in order to keep industrial plants supplied from day to day and to furnish domestic consumers with enough coal to prevent actual suffering. Prices are now enforced according to the mine figures fixed by the Government, plus the margins of profit computed; but in view of the limited supply of coal, the interest of the public is no longer concentrated on prices, but is rather directed at the necessity of getting fuel at any cost.

LOUISVILLE

Government price regulations reported greatly exceeded by wagon mine operators who demand prices obtained nearby at retail for car lots for shipment. Car supply full; labor short.

What is described as a widespread practice in evasion of the Fuel Administration price regulations is reported to be prevalent among operators of the so-called wagon mines. These producers, it is said, are often able to obtain retail prices in nearby communities sometimes as much as a dollar above the Government schedule, and they are demanding equal prices from buyers of coal on track. There is said to be a growing belief that the Government will not take drastic steps to deal with this evasion. On the other hand, buyers representing industries which must have coal are reported to be paying the prices asked gladly, that being the only way many of them can obtain coal. They are willing to take the chance of incurring penalties in order to get fuel to keep their plants going.

Except where such coal is concerned the distributing trade can buy none on the open market. The industrial demand is as insistent as ever, and conservation movements are not expected to make any difference. There is a plentiful car supply reported, although some western Kentucky operators complain of an occasional shortage. Shortage of labor in the eastern and southeastern field, however, is said to be holding production down and to be responsible for empty coal cars sometimes standing 48 hours on the switches. Mild weather is helping the retailers, and the domestic supply is somewhat easier though no stocks are being accumulated.

Coke

CONNELLSVILLE

Production decreased on account of railroad congestion. Better labor supply. Market largely nominal.

The railroad congestion has grown much worse. The Monongahela division of the Pennsylvania is almost completely tied up, its sidings and yards congested, with little coke moving off the division and still less moving on. Movement over the B. & O. and P. & L. E. is restricted by the fact that these roads will not allow their cars to go off their tracks.

Last week's shipments are estimated at between two-thirds and three-fourths of the average rate for recent weeks, and was decidedly insufficient to meet the needs of the blast furnaces. Late last week the priority committee at Washington issued an order upon operators to ship furnace coke in preference to foundry coke, but this can afford little relief to the blast furnaces, as normally foundry coke shipments are only about one-tenth the total. If the foundries do not get coke they may ask furnaces to suspend shipments of pig iron, and that is not the character of relief desired by furnaces.

While a period of decreased car supply is not a good one in which to judge as to labor conditions, the general testimony is that the men are more willing to work full time than they were a few months ago, one important reason assigned being that many have subscribed liberally to Liberty bonds, particularly the second issue, and they desire to make extra money instead of simply making both ends meet.

The market is largely nominal, on account of restricted output, and is quotable at the Government prices, $6 for furnace, $7 for foundry, $7.30 for crushed beehive and $6.50 for crushed by-product, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Nov. 10 at 315,808 tons, a decrease of 16,615 tons, and shipments at 302,768 tons, a decrease of 29,576 tons.

Buffalo—The coke movement is pretty uniform, with everything coming in on contract, as the ovens still claim not to have any free coke to sell. The nominal price is $7 at the ovens for foundry and $6 for furnace and low grades, to which must be added $1.85 freight. It cannot be learned that the local furnaces are short of a supply, none of them having shut down. All are running strong. Iron ore receipts by Lake continue heavy, being for the week 268,775 gross tons.

Middle Western

GENERAL REVIEW

Car supply a little better. Production increased. Market gorged with orders. Sellers besieged with requests, to assume additional burdens.

Two things only have saved the market from disaster the past week. One is that the railroads by constant effort and continual and urgent requests, in some instances threats, have increased the car supply available to the mines. The other is that the weather has remained open, thereby permitting considerable reduction in the use of coal both for domestic and steam purposes. The effect is noticeable, resulting in an increased production throughout the central and southwestern coal-producing fields. Almost every sales office has enough orders on its books to run it for several weeks, and is compelled to decline the acceptance of additional burden, until such a time as some chance is discernible of satisfying the delayed orders. This is a direct result of labor disturbances, and insufficient supply of equipment.

Another reason for operators and jobbers refusing to accept business for deferred shipment is the result of a recent ruling by fuel administrator Garfield, which in substance, compels that orders be acknowledged at the Government price, thereby forcing the seller to fill the order at the now-fixed price regardless of when the order might be completed. The seller argues that there is no necessity for him to book ahead, and take any unnecessary chances, of future labor disturbances or change in price, and he therefore carries as small a list of orders as possible.

Although the miners in convention at Kansas City last Tuesday—after an all-day's session—rejected the automatic penalty clause, by a vote of 185 to 167, they are still at work, and have in a large measure almost completely overcome what promised to be distressing conditions. It is claimed that coal shipments have been moving daily in excess of the demand, and the trade at this time has assumed almost normal appearance. The operators claim that if labor troubles can be averted the increased production will be of sufficient volume to meet the needs of that market. Throughout this territory the retail trade has been brisk, orders have been handled with reasonable promptness; in fact, better than for some time past. In many instances, dealers have pooled their stocks to the advantage of all interested—thereby insuring the dealer who had no coal of some particular grade, a supply for his clientele from his neighbor's stock.

State Fuel Administrator Charles Webster, of Iowa, it is claimed, suggests that there are several railroads with lines in that state running passenger trains that can be discontinued for a short period, thereby saving fuel, or rather putting passenger engines in the freight service, for the relief of the coal shortage, should it become more acute.

No serious labor disturbances have been noted during the week in Indiana. The car supply continues to be the same as for several weeks past. Coal production could be materially increased with a fuller supply of cars.

During the week five coal operators were served with Federal warrants, charged with conspiring to defeat the purpose of the President's proclamation, fixing the price of coal at Indiana mines. Deputies from the office of Mark Storen, Indianapolis, served the warrants. The men arrested include Nick Schrupferman, Fred Schrupferman, William M. Stroebel, Archie C. Miller and L. J. Wolf, of Brazil. All are connected with the Cleveland Coal Co., which is alleged to have been organized for the purpose of coming within the meaning of President Wilson's proclamation dealing with brokerage firms.

The warrants charge that the defendants conspired to charge 15c. per ton more than the price fixed by the executive proclamation, but it is understood that the information in the hands of the Federal authorities show that in some instances the excessive amount assessed ran as high as $1 per ton.

CHICAGO

Demand seems unlimited, for both domestic and steam.

The rigid regulatory measures of the Fuel Administrators is having its effect on the Chicago situation. Almost all free coal, and this is limited in amount, is being distributed under the direction of State Fuel Administrator Williams. The principal de-

mand at this time is for domestic coal—the percentage of householders that have sufficient stock to carry them through the winter is limited to less than one-third.

The fuel-ticket plan in vogue, made effective by Cooke County Fuel Committee, forbids the delivery to one person of more than 10 days' supply. The situation is more tenable only by the fact that there has been a considerable improvement in the car supply, due to the now-prevailing clement weather. The improvement the past week is about 25 to 35 per cent. over that of a week ago, and still the mines in Illinois are not running on an average to exceed 65 per cent. full time, whereas with a full car supply they could produce in excess to their rated capacity.

Some of the most optimistic of the Chicago trade view the whole situation as discouraging. The Eastern producing districts are almost shut out of this market by railroad disabilities, and the movement of coal in other directions. Anthracite, Pocahontas and New River are all moving into this market slowly, as embargoes are placed and lifted from time to time. Some dealers who continued throughout the spring and summer months to take in all the coal that they could buy, disregarding all prices, now have some coal in stock, which they are able to move at a profit, and to the satisfaction of their customers. In such instances the price may be and no doubt is in excess of the present current price, but not beyond the price allowed to be charged by the Fuel Administrator. Hocking and eastern Kentucky is very scarce, and moving slowly into this market, with no indications of a fuller supply of these grades.

There was an order enforced during the week, emanating from the State Fuel Administrator's office, prohibiting the display of electric signs before 7 p.m. and after 11 p.m. This item alone, it is estimated, will save 40,000 tons of coal per year, and if a like policy was followed in other large manufacturing and distributing centers, where large electrical signs are plentiful, the saving would be immense.

Quotations in the Chicago market are as below, per net ton, f.o.b. cars at mines:

MILWAUKEE

Milwaukee to receive no more anthracite after Dec. 1. No further price regulation orders. Supplies by Lake decrease.

The promulgation of an order that no more anthracite would be allowed Milwaukee consumers after Dec. 1 led to the shutting off of supplies to approximately 100 small retailers this week. This means that many householders will have to resort to soft coal. Anthracite will be shipped to the interior, should any arrive after Dec. 1. State Fuel Administrator Fitzgerald is of the opinion that by Jan. 1 anthracite coal will become so scarce and expensive in the interior that bituminous coal will have to be substituted.

Milwaukee consumers are pretty well stocked with coal. The president of the leading fuel company is authority for the statement that his company delivered to consumers during the six months ending Nov. 1, 1917, an amount of coal equal to the quantity delivered during the entire year ending Apr. 1, 1917. During the six months ending Nov. 1, 1917, retailers took away from the company's yards 25,000 tons more than they did during the same period last year.

Under the direction of Fuel Administrator Fitzgerald, controllers in the various counties in the state are conducting a survey which will reveal the exact amount of coal which will be needed to supply every family in the state; also the amount on hand and how the quantity needed compares with last year's tonnage. Following conferences with retailers in the rural districts there is a possibility that price readjustments will be made.

Four cities in Wisconsin—Ashland, Eau Claire, Marinette and Wausau—have taken steps to supply fuel to citizens without profit, and several other places have the matter under advisement. Authority to do so was granted by an act of the Legislature in 1915.

James A. Hannan has been appointed fuel administrator for Milwaukee County, with T. L. Coleman and Chester M. Burdick as an advisory committee. They are to see that the government fuel regulations are enforced.

The State Railroad Commission has allowed the railroads a raise averaging 8c., but nowhere exceeding 15c. per ton on coal and coke shipped to and from points within Wisconsin. The rates are classed as emergency rates and will only apply for a period of one year. Not all soft coal rates in the state are settled.

The Milwaukee Chamber of Commerce and the fuel administrators of states in the Northwest which are served by the Great Lakes, have joined in a petition to Secretary of Commerce Redfield to cause all aids to navigation, such as lightships, buoys, stakes, etc., on the several lakes and their connecting channels to remain in position as long as possible this fall in order to lengthen the season of navigation and thus expedite the movement of coal which is retarded at the present time by a lack of coal cars. They also suggest the employment of ice breakers to keep channels open to as late a date as possible.

Receipts of coal by Lake have slowed down considerably, but with good weather, fully a month of navigation remains. Up to Nov. 15, the record stood: Hard coal, 811,605 tons; soft, 2,730,109 tons; last year, hard, 718,520 tons; soft, 3,288,117 tons.

ST. LOUIS

Continued mild weather has brought about easier conditions, although the demand far exceeds the supply of all coals with the exception of screenings from the Standard field, which are easier. Car shortage continues, with delayed movement. No Eastern coals.

Continued warm weather has helped materially to aid the local situation, which had the weather been seasonable, would have been somewhat critical. Car shortage seems to be getting worse on practically all roads. This is due to the fact that the railroads are not moving cars as promptly as would seem reasonable. Complaints are made at East St. Louis that hundreds of cars are tied up there and are blocking the terminals. There are embargoes against cars going to certain parts of St. Louis on some roads on account of the failure of these roads to remove the empties. Several team tracks are congested with empty cars on account of the railroads being unable to get them back to the originating line.

This condition seems to be more local to terminal points than to the trunk lines, although on the trunk lines movement is not what might be expected.

In the Carterville field the shortage of water continues at many mines, and the miners are not anxious to show a maximum tonnage per man from indications.

The railroads are furnishing about 40 per cent. equipment in this field and most of the coal seems to be taken by railroads or going on Government requisitions, little being on the open market going to domestic consumers.

In the Mt. Olive field the tonnage is pretty well taken up by contracts, although there has been a little free coal from this territory moving in the last few days. Car shortage here has also prevented the mines getting in full time.

An example of how the car shortage affects some mines is shown at one of the operations in the Mt. Olive field this week. Enough cars were set in the night previous. At noon that day the switching crew arrived with enough cars to continue the day's work, but when, within a quarter of a mile of the mine, the 12 o'clock whistle blew. The crew left the cars where they were, and went back to the nearest town for lunch. When they returned at 1:30 the miners had become tired waiting and had gone home. It would only have taken five minutes more of their time to set these cars in, and this mine produces between 3000 to 4000 tons per day. This incident occurred on the Wabash R.R.

In the Standard field the bulk of the tonnage still continues to go on railroad contracts and many of the mines that formerly made mine run are now producing 2-in. lump, which produces an unusual amount of screenings, so the screenings market is pretty well taken care of, although Standard lump coal is pretty scarce. On account of embargoes some sections are being offered more than they received formerly.

The mines in this field, however, are not getting as much time on account of equipment as in other fields, and the tonnage of lump coming in is not taking care of the demand, although there is no suffering and many consumers are getting a little stock ahead.

In the retail trade conditions are much easier. Nearly everybody has a little coal now and getting some ahead. This applies to the retail yards also and to some extent the steam plants.

The country trade, however, is receiving little coal, with but slight promise of more, but if mild weather continues this will be overcome in the next two weeks.

There has been a little anthracite moving in, but nothing at all in proportion to what should be coming. There has been no West Virginia smokeless and almost nothing from the Arkansas field.

The local situation is pretty well in hand now by the St. Louis Fuel Committee, and the situation in the state is rapidly being rounded up under the State Fuel Administrator. Consequently, conditions in a general sense are looking considerably better.

The price f.o.b. mine per net ton is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.65@2.80	$2.65@2.80	$2.65@2.80
3x6-in. egg	2.65@2.80	2.65@2.80	2.65@2.80
2x3-in. nut	2.65@2.80	2.65@2.80	2.65@2.80
No. 2 nut	2.65@2.80	.....	.....
No. 3 nut	2.65@2.80	.....	.....
No. 4 nut	2.65@2.80	.....	.....
No. 5 nut	2.15@2.30	.....	.....
2-in. sergs	2.15@2.30	2.15@2.30	2.15@2.30
2-in. lump	.....	.....	2.65@2.80
3-in. lump	.....	2.65@2.80	.....
Steam egg	2.65@2.80	2.65@2.80	2.65@2.80
Mine run	2.40@2.55	2.40@2.55	2.40@2.55
Washed:			
No. 1	$2.65@2.80	$2.65@2.80	.....
No. 2	2.65@2.80	2.65@2.80	.....
No. 3	2.65@2.80	2.65@2.80	.....
No. 4	2.65@2.80	2.65@2.80	.....
No. 5	2.15@2.30	2.15@2.30	.....

Williamson & Franklin Co. rate is 87½c.; other fields, 72½c.

KANSAS CITY

Situation somewhat easier, but no stocks can be accumulated. Short shipments of Arkansas anthracite.

Although retail and wholesale coal dealers in Kansas City have felt a temporary relief from coal shortage, there is still an uneasiness lest a sudden cold snap will bring on the crisis again before any reserve supply can be obtained.

Shipments have increased since the miners began work in Kansas, Missouri and Arkansas, and the priority order on coal cars has also helped the consumers to a slight degree. But no reserve can be laid up and big industries are running only a few days ahead of their coal supply.

The retail condition is somewhat better than last week with the exception of Arkansas semi-anthracite, on which shipment cannot be obtained satisfactorily due to car shortage in that territory.

The Kansas City Railways Co. has less than a week's supply of coal on hand. However, the Kansas City Light and Power Co., which has been obtaining much of its current from the aforesaid railway company, has now a new 3500-kw. generator.

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, LaSalle, Bureau and Will
Steam lump	$2.65@2.80	$2.65@2.80	$2.65@2.80	$2.65@2.80	$2.65@2.80	$3.10@3.25
Domestic lump	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.30	3.10@3.25
Egg or furnace	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Small egg or nut	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Stove	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Chestnut	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Pea	2.65@2.80	2.65@2.80	.....	.....	2.65@2.80	.....
Washed egg	2.65@2.80	.....	.....	.....	2.65@2.80	3.10@3.25
Washed stove	2.65@2.80	.....	.....	.....	2.65@2.80	3.10@3.25
Washed nut	2.65@2.80	.....	.....	.....	2.65@2.80	3.10@3.25
Mine-run	2.40@2.55	2.40@2.55	2.40@2.55	2.40@2.55	2.40@2.55	2.85@3.00
Screenings	2.15@2.30	2.15@2.30	2.15@2.30	2.15@2.30	2.15@2.30	2.60@2.75
Washed slack	2.15@2.30	2.15@2.30	2.15@2.30	2.15@2.30	2.15@2.30	2.60@2.75

			Smokeless			
	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hocking	West Va. Splint
Dom. lump	$2.65@2.80	$2.65@2.80	$3.10@3.25	$2.60@2.75	$2.60@2.75	$3.05@3.20	$2.85@3.00
Steam lump	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.60@2.75	3.05@3.20	2.85@3.00
Egg	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.60@2.75	3.05@3.20	2.85@3.00
Small egg or nut	2.65@2.80	2.65@2.80	3.10@3.25	2.60@2.75	2.60@2.75	3.05@3.20	2.85@3.00
Mine-run	2.40@2.55	2.40@2.55	2.85@3.00	2.45@2.60	2.70@2.85	2.60@2.75	2.60@2.75
Screenings	2.15@2.30	2.15@2.30	2.60@2.75	2.10@2.25	2.10@2.25	2.55@2.70	2.35@2.50